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GRENADA

REPORT

ON THE

AGRICULTURAL DEPARTMENT

FOR THE YEAR

1955.

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GRENADA.

PRINTED BY THE GOVERNMENT PRINTER, AT THE GOVERNMENT PRINTING OFFICE,
ST. GEORGE'S,
1957.

[*Price: $1.00.*]

COMMONWEALTH MYCOLOGICAL INSTITUTE
16 JAN 1958

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A. Gittens	„ Assistant.
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R. Edwards (Limlair)	Senior Agricultural Instructor.
D. F. Mason	Produce Inspector.
H. O. Otway	„ „
K. I. Rush	Junior Agricultural Assistant.
L. Sayers	Junior Agricultural Instructor.
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E. Friday	Land Rent Collector.
C. John	Foreman, Botanic Gardens.
C. Marshall	Messenger.

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Cocoa Industry Improvement.

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G. L. Ogilvie	Senior Agricultural Instructor.
B. Pitt	JuniorAgricultutral Instructor.
C. Augustine	„ „
I. Ferreira	„ „
N. D. Nedd	„ „
J. Marshall	Foreman Maran Cocoa Station.
R. Mark	Foreman Boulogne Cocoa Station.
R. Lett	Propagator Attendant.
D. Fletcher	„ „
J. Telesford	„ „
E. N. Barriteau	Clerical Assistant.
K. J. Nedd	„ „

COLONIAL DEVELOPMENT AND WELFARE SCHEME D.

Improvement of Land Settlement.

D. A. Rennie	Junior Agricultural Instructor.
A. Hinds	Junior Agricultural Instructor.

COLONIAL DEVELOPMENT AND WELFARE SCHEME D.

Fisheries Improvement.

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C. Renwick	Fisheries Assistant.

COLONIAL DEVELOPMENT AND WELFARE SCHEME D.

Agricultural Development, Carriacou.

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M. John	Junior Agricultural Instructor.

Plant Diseases and Pest Control.

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S. Kent	,,
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C. Campbell	,,
L. Raeburn	,,
Miss S. Lord	Clerical Assistant.

REPORT OF THE DEPARTMENT OF AGRICULTURE, GERNADA, B.W.I. FOR THE YEAR ENDING 31ST DECEMBER, 1955.

SECTION I.

AGRICULTURE IN THE COLONY.

Weather Conditions.

1. The weather for the period, might be considered normal, excluding the month of September in which the precipitation—due principally, it is believed, to the hurricane Janet which shook the island on 22nd and 23rd September—was considered abnormal. Every form of Agriculture suffered in major measure from the hurricane.

2. Data from recording stations are appended. (See Appendix).

Cacao Industry.

3. Weather was considered favourable for the production of cacoa up to preceeding the hurricane Janet. Damage to cacao cultivation was considered a major disaster. Land slips and washings were common. It has been estimated that the crop was ruined 85%.

4. Prices ranged from 58 cents per lb. to 61 cents per lb. depending on quality.

5. Exports amounted to $4,158,807.00.

TABLE I.

Year.	*Exports (Cwt)*	*Value ($)*
1949 ..	48,428	1,749,550
1950 ..	40,227	2,434,634
1951 ..	48,504	3,596,116
1952 ..	54,178	3,537,395
1953 ..	61,128	3,862,773
1954 ..	51,362	4,959,403
1955 ..	47,327	4,158,807

Nutmeg Industry.

6. Indications were that the crop would be the largest on record. The hurricane referred to in paragraph 3 above virtually paralyzed the industry. The major number of trees were completely destroyed while a large percentage were blown down or left standing and deforliated. A certain minor percentage of trees were unhurt.

7. The Grenville Processing Station having proved too small for efficiently handling the nutmegs business of that area, the Grenada Co-operative Nutmeg Association, erected new premises as an extension and larger than the Grenville Processing Station.

8. Advances were considered satisfactory for nutmegs and for mace. Advances for nutmegs amounted to $744,611.34 and for mace, $271,343.37.

9. Exports of nutmegs totalled 52,887 cwt. valued at $2,927,051 as compared with 48,881 cwt. valued at $1,939,203.00 for the preceeding year.

10. Exports of mace amounted to 6,478 cwt valued at $1,172,512 as against 7,439 cwt. valued at $977,881 for the preceeding year.

11. Nutmeg oil (manufactured by one estate only) exports amounted to 6,570 lbs. valued at $35,046 compared with 4,050 lbs. valued at $18,143 exported the previous year.

12. The value of the nutmeg industry to the economy of the Colony might be gauged as follows :—

TABLE III.

Quantities and Values of Exports of Nutmegs, Mace and Mace Oil.

Year.	Nutmegs (Cwt)	Mace (Cwt)	Nutmeg Oil (lb)	Total Value ($)
1949 ..	44,908	6,289	3,690	2,274,774
1950 ..	61,947	6,515	6,280	3,976,488
1951 ..	23,152	5,199	5,940	2,199,514
1952 ..	44,607	6,886	3,140	2,334,987
1953 ..	37,082	7,508	10,260	2,328,894
1954 ..	48,881	7,439	4,050	2,935,227
1955 ..	52,887	6,478	6,570	2,934,609

Lime Industry.

13. There is no evidence of any appreciable extension of the lime industry. Exports of lime oil for the year were 3,631 lbs. valued at $25,953 as compared with 10,270 lbs. valued at $64,084 for the year 1954. Raw lime juice exported amounted to 23,480 gallons valued at $7,535 as compared with 1,600 gallons valued at $516 for 1954. The value of export of lime products amounted to $33,488.

TABLE V.

Year	Lime Oil (lb)	Lime Juice (gals)	Total Value ($)
1951 ..	3,695	45,810	68,169
1952 ..	3,945	128,080	91,807
1953 ..	6,193	83,280	94,591
1954 ..	10,270	1,600	64,600
1955 ..	3,631	23,480	33,488

Coconut Industry.

14. All shipments were to Barbados. Whole coconuts shipped out the Colony totalled 84,520 valued at $3,528. For the corresponding period 1954 coconut shipments amounted to 5,300 and were valued at $1,300. Damage by hurricane estimated at 50% of trees.

15. During the year 6,303 boxes of laundry soap and 33,974 gallons of coconut oil were manufactured locally for home consumption.

Banana Industry.

16. Interest in production of bananas continued keen. Stems exported totalled 92,243 valued at $139,500.00 as contrasted with 108,887 stems valued at $189,237 for 1954.

17. Plant material was imported from Jamaica, Dominica and St. Lucia for planters by the Grenada Agriculturist Union. 15,000 plants came from Jamaica, 55,000 from Dominica and 85,500 from St. Lucia.

Cotton Industry.

18. Carriacou continues to be the centre of the production of raw cotton. The crop continued to be ginned under the supervision of the Department of Agriculture. Bales for 1955 amounted to cwt. 1,093 and the previous year's production was 1,140 bales valued at $72,617.

Sugar Industry.

19. A total of 23,832.5 tons of cane ground by the Grenada Sugar Factory yielded 2,469.7 tons of sugar; 2,202 tons being park crystals and 267.7 tons show crystals. The return of 9.65 tons cane per ton of sugar was considered good, being an improvement over returns in the six previous years. Sugar is produced for local consumption.

Minor Agricultural Industries.

20. Fruits and vegetables and Spices (Clove and Cinnamon) exported principally to the neighbouring islands for the years 1954 and 1955 are as follows :—

Year.	Exports in Value ($)
1954 ..	4,617
1955 ..	32,611

Livestock.

21. Livestock to neighbouring colonies amounted to $2,030.00.

SECTION II.

WORK OF THE DEPARTMENT OF AGRICULTURE.

Botanic Gardens.

22. The Botanic Gardens was maintained in satisfactory condition. The following number of economic and ornamental plants were distributed :

Grafted Mangoes ..	103	plants.
Budded Citrus ..	400	„
Other Economic ..	31	„
Ornamental Plants ..	590	„

COCOA INDUSTRY IMPROVEMENT SCHEME.

Colonial Development and Welfare Scheme D. 612.

(Summary by D. A. Perryman, D.I.C.T.A.)

Weather Condition.

23. The weather conditions during the early part of the year from January to the early part of March, were ideal for the establishment of clonal cocoa planted the previous year, but from March to the end of May weather conditions were very dry. The rainfall measured during this period was far below the average over the last eight year period.

24. The rainfall for the period June to December was normal, with the exception of September, where the measured rainfall on all stations was considerably higher than the mean rainfall over the last eight year period.

25. Hurricane "Janet" struck the island on the 22nd and 23rd of September.

26. The hurricane caused considerable damage to buildings, cultivations, forest areas and soil throughout the island. A brief description of the effects of the hurricane on the Scheme is given elsewhere in this report.

27. The high rainfall recorded for September was due to the continuous and heavy rains which persisted throughout the duration of the hurricane. On all the cocoa stations, over 10 inches of rain was recorded on September 23rd and the rain gauges overflowed.

28. The rainfall figures for the cocoa stations are appended to this report.

The Investigational Programme.

29. *The Clonal Trials.*—The period under review ushered in the seventh year of these trials, planted in 1948 on all three stations of the Cocoa Industry Improvement Scheme. These trials represent the clone testing programme for yield, quality, resistance to pests and diseases. At present emphasis hinges on yield and the following clones are averaging over 1,000 lbs. dry cocoa per acre: G.S. 36, 29, 46, 18, 26, 65, 19, 77, 48, 78, 24, 50, 67, 57, 17, 40. During the 1954-55 crop year, G.S. 29 yielded at the rate of 2,314 lbs dry cocoa or over 11 bags per acre at Mt. Horne Cocoa Station.

30. Certain routine cultural operations were carried out during the year on these experiments. These consisted of weeding, pruning, regulation of shade, staking and clearing contour drains. Two manurial applications were made on all three stations.

	Mt. Horne	Ashenden.	Maran.
1st Application ..	1 : ½ :1 : N.P.K. Mixture 2 lbs. per tree.	1 : ½ :1 : N.P.K. Mixture 2 lbs. per tree.	1 : ½ :1 : N.P.K. Mixture 2 lbs. per tree.
2nd Application ..	1 : ½ :1 : N.P.K. Mixture ½ lb. per tree.	2½ : ½ : 1 : N.P.K. Mixture ½ lb. per. tree.	

31. *Pest and disease control :*—Slight outbreak of thrips and beetles were controlled by spraying with wettable Agrocide and Lead Arsenate in a linseed oil emulsion. Black pods were removed at time of harvesting. The occurrence of Witches Broom was particularly rare except at Maran.

32. *The N.P.K. Trials :*—These are represented by two 3 x 2 x 2 partially confounded randomised block experiments at Maran and Mt. Horne. Planted in 1949 and 1950, they received their 6th and 5th manurial application respectively in July. The manurial treatments of N at three levels, and P and K at two levels each are standard, but the rates of application increase annually to a specified maximum attainable at the tenth application.

	Sulphate of Ammonia		Tripple Superphosphate		Sulphate of Potash	
	No.	N1. N2.	Po.	P1.	Ko.	K1.
Maran ..	Nil.	1⅓lbs. 2⅔	Nil.	1 lb.	Nil.	1 lb.
Mt. Horne ..	Nil.	1 lb. 2 lbs.	Nil.	¾ lb.	Nil.	1 lb.

33. Routine operations in the nature of weeding, pruning, regulation of shade, staking and clearing contour drains, were carried out during the year. In an attempt to control beetles and thrips, the experiments were sprayed with lead arsenate and wettable agrocide in a linseed oil emulsion.

34. The 1954-55 crop analyses of both experiments indicated highly significant differences between the clones on both stations. None of the treatments were significant at Maran, but the Nitrogen Potash interaction gave a slight significant increase in yields at Mt. Horne.

35. Pen Manure vs. its NPK equivalent with extra nitrogen trials. (Two 2 x 2 x 2 partially confounded randomised block experiments located at Mt. Horne and Ashenden). These were planted in 1950 and have not received any fertilizers or manures since their fourth application in 1954, nor will they receive any until 1958. The growth of the trees has been nevertheless satisfactory at Mt. Horne and partly so at Ashenden where poor soil conditions militates against the clones in certain areas.

36. Yield analyses reveal a significant response to Pen Manure in the presence of a complete NPK mixture with additional Nitrogen at Ashenden. This should however be interpreted with caution.

37. *Forking, mulching and forking-in-mulch trials :*—(Two 4 x 2 x 2 Randomised Block Expiremonts).. These trials at Mt. Horne and Carriere Estate were planted in 1950 and 1953 and have now entered their fifth and third years.

38. *Mt Horne :*—The third application of mulch was made at Mt. Horne in June 1955. This consisted of a mixture of elephant and Guatemala grasses, weeds and shrubs at the rate of 1,000 lbs. green mulch to each "Mulch" and "Forking-in-Mulch" plot equivalent to 13 tons per acre. The "Forking" and "Forking-in-Mulch" plots were forked in August when the mulch was sufficiently broken down.

39. *Carriere Estate :*—This experiment was weeded whenever the occasion arose. Two applications of chemical manures were made in May and November comprising complete N.P.K. mixtures at the rate of 2 ozs. per tree. In July, each tree received a basket of Pen Manure followed by circle forking.

40. Besides these specific cultural treatments all contour drains were cleaned and shade regulated in both experiments. At Mt. Horne the trial was sprayed with lead arsenate and wettable agrocide in a linseed oil emulsion to control beetles and thrips.

41. The analysis of the 1954-55 crop yield at Mt. Horne failed to reveal any significant treatment differences. The clonal difference was however significant.

42. *Liming and manurial trial—Hope Estate :*—This experiment planted in 1954 is now one year old and the performance of the clones has been extremely good. No treatment has been applied but during the year the following operations were carried out :—Weeding, forking and staking. Efforts were also made to establish an angelica hedge on the side of the experiment bordering the estate trace.

43. *Estate Clonal Trials :*—Originally six of these trials were planted to compare the performance of ICS and GS strains under identical conditions. The experiment at Paradise Estate was destroyed in September as a result of the hurricane. The growth of the plants in the other experiments has been nevertheless good, and it is hoped that yield record would be commenced in the very near future, in the more advanced of these experiments.

Propagation of Rooted Cocoa Cuttings.

44. *Increased capacity of propagation plants :*—During the year a green house constructed out of reinforced concrete columns and rafters and enclosed in glass was erected at the Mt. Horne Station. The structure is 30 feet long by 12 feet wide, the eve of the building is 10 feet from floor level. The floor is concreted with a slope to provide for drainage.

45. Four racks of angle iron 3 feet 8 inches wide are constructed on either side of a central passage way which is 3 feet 2 inches wide. The structure can accommodate 3,800 plants arranged in 5 tiers, the first tier of plants is placed on the floor.

46. A Bahnson humidifier driven by a petrol air-cooled engine, was originally installed within the green house, but great difficulty was experienced in starting the engine due to condensation of water in the cylinder head and magneto. The engine and humidifier was later removed outside the building, the humidifier being connected to the green house by means of a large galvanise cone. The humidifier is operated during the day from 7 a.m. to 6 p.m.

47. Overhead shade is provided by galvanise strips 4 inches wide running in a north to south direction. Lateral shade is provided by moveable screen on both the east and west side of the green house. The screen on the east side is lowered in the morning, and soon after noon it is rolled up and the western screen lowered.

48. The central core method of propagation described by D. B. Murray in the 1953 Report on Cocoa Research of the Imperial College of Tropical Agriculture, is the technique used. The first small scale trial proved satisfactory and a full scale trial was being conducted when the hurricane of September 22nd severely damaged the glass house.

49. *Production of Rooted Cocoa Cuttings :*—At the 5th Meeting of the Inter-American Technical Cacao Committee, the following recommendation was made : "That there be a uniform method of expressing efficiency on Cacao Propagating Stations, and that this be expressed by the Symbol PE (Propagating Efficiency) which is the number of plants produced (ready for field planting) from every 100 cuttings set in rooting bins. In addition, the rooting efficiency should be expressed by the symbol "RE", that is the number of cuttings rooted from every 100 cuttings set".

50. The following table shows both the RE, rooting efficiency and PE, propagating efficiency of the tree cocoa stations, as well as other information from which these indices have been computed, for the period under review. The last column, "Over-all Figures", is the cumulative totals for all three stations.

	Boulogne.	Ashenden	Maran	Overall Figures.
(*a*) Number of cuttings set	136,426	79,763	45,822	262,011
(*b*) Number of cuttings rooted from the number set.	97,635	48,968	27,810	174,413
(*c*) RE (Rooting Efficiency) ..	71	61	61	67
(*d*) No. of cuttings produced from No. set in (*a*)	97,391	48,100	26,919	172,407
(*e*) No. of plants on storage floors on 1st January, 1955	31,960	22,500	14,954	69,414
(*f*) No. of plants produced during the year	98,909	46,436	28,662	174,007
(*g*) Total No. of plants in storage during the year i.e. (e) —(f) ..	130,869	68,936	43,616	243,421
(*h*) Total No. of plants which died during the year from (g)	8,424	7,559	6,070	22,053
(*i*) Per cent of deaths i.e. 100 x (h)—(g)	6	11	14	9
(*j*) Per cent survivals	94	89	86	91
(*k*) No. of plants that would be distributed from the number of cutting set i.e. (j) x (d)—100	91,547	40,163	23,147	156,890
(*l*) PE (Propagating Efficiency) i.e. (100 x (k)—(a)	67	50	50	60

51. The overall rooting efficiency RE, increased from 60% in 1954 to 67% this year, and the propagating efficiency, PE, increased from 54% in 1954 to 60% in 1955.

Plant Distribution.

52. The following table shows the number of plants distributed for (a) nursery expansion, (b) supplies or replacements and (c) originals and the acreage equivalent. Comparative total figures are given for 1954.

Station.	Nursery Expansion	Supplies.	Originals. Number.	Originals. Acreage. Equivalent	Total No. of plants. Distributed.
Boulogne	2,292	25,835	41,353	95	69,480
Ashenden	856	7,878	20,037	46	28,769
Maran	599	10,187	12,046	28	22,832
Totals—1955 ..	3,747	43,898	73,436	169	121,081
Totals—1954	4,579	8,957	163,912	377	177,448

53. The rate of supplying or replacement of dead pickets was extremely high, a total number of 43,898 plants were distributed for this purpose, which represents 27% of the number of plants distributed as originals in 1954. This high rate of supplying is due to a rigorous dry spell which commenced in early March and continued into the early part of June. A combination of the dry spell together with a lack of adequate shade and protection from the prevailing trade winds, which develop a fairly high velocity during this time of the year, have contributed to the wide spread death of plants.

54. A drive was made this year to supply all clonal cocoa plots up to the age of 3 years before the planting of new plots on any appreciable scale commenced.

55. As a result of this high rate of supplying the number of clones distributed for the purpose of planting new areas were greatly reduced.

Application for Rooted Cocoa Cuttings for Planting in 1956.

56. A record number of 660 applications were received for 481,480 rooted cocoa cuttings, the equivalent of approximately 1,106 acres at a planting distance 10 inches by 10 inches.

57. This ever growing demand for plants demonstrates the keen interest growers are taking in establishing clonal cocoa on their properities.

Importation and Exportation of Clonal Material.

58. The following Grenada selections were exported during the year as rooted cuttings, with roots washed free from soil :—

59. To the Department of Agriculture, St. Vincent : G.S. 18, 19, 34, 68, 32, 5, 53, 65, 71, 29, and 36.

60. To the Department of Agriculture St. Lucia, via St. Vincent for quarantine purposes : G.S. 29, 36, 18, 19, 46, 56, 65, 67, and 71.

To the Cocoa Agronomist, Trinidad : G.S. 29, 36, 65, 67, and 78.

62. To the Cocoa Research Scheme, I.C.T.A., Trinidad : G.S. 78, 67, 77, 68, 62, 10, 71 and 50.

63. The following clones were imported into Grenada :—

64. From St. Lucia : I.C.S. 1, 6, 8, 45 and 98. These clones were imported in the form of cuttings taken from the nursery in St. Lucia, air freighted to Grenada, and rooted here in the closed bin propagators. 70% of the cuttings introduced in this form rooted successfully.

The effect of the Hurricane on 22nd-23rd September on the Scheme.

65. *The Investigational Programme :*—All the experiments conducted by this scheme were reduced to a mass of tangled and broken vegetation by the Hurricane of September 1955. Trees were defoliated and blown down, shade and windbreaks were destroyed and there were sporadic occurrences of slope wash. Nevertheless, blessed with good weather in the post hurricane period, the recovery has been extremely rapid with very few exceptions. The set back therefore has been only temporaty, particularly in the case of those experiments already in bearing.

66. *Plant Propagation :*—Considerable damage was done to propagator sheds and storage sheds for plants. Nursery plants were defoliated, blown over and the overhead shade and wind breaks severly damaged or destroyed.

67. The result was that propagation of plants was considerably slowed down. The Ashenden Station, which was not so badly damaged, continued propagation but at a reduced rate. Propagation at Boulogne and Maran had to be discontinued.

68. *Plant Distribution :*—This would have continued under normal conditions well into October, but it was not possible to distribute plants after the hurricane.

69. A large number of plants, ready for distribution were destroyed in the storage sheds. Water supply disruption caused a large number of cuttings in the rooting bins and plants on the floors to die.

70. The overall result will be a considerable reduction in number of plants available for distribution in 1956 compared to the original estimate of 200,000.

71. *Clonal Plots* :—Over 50% of the plants distributed in 1954 will apparently have a poor chance of survival. These plants were badly shaken and all overhead shade and lateral protection destroyed.

72. The older clonal cocoa plants, generally speaking, stood up well to the wind. In many cases they were defoliated and blown over, but they rapidly recovered when proped and cultivated.

73. A number of trees died due to exposure to the wind and sun which scorched the bark of the trees. The trees flushed on several occasions but the flushes were destroyed and the plants having very little reserves of nutrients died.

74. *Pests* :—The hurricane created ideal conditions for the infestation of the Cocoa Beetle, and numerous beetles have been observed both in clonal plots and old seedling cocoa.

75. Outbreaks of Thrip (*Selenothrips rubrocinctus*)attacks are also widespread.

The Cocoa Rehabilitation Board.

76. Three meetings of the Board were convened during the year. The main topics discussed was the financing of the scheme as from the 1st of the year as no further financial assistance was to be granted by the Colonial Development and Welfare Organisation.

77. One of the recommendations put up by the Board was to increase the cess on exports from one to two cents per pound.

78. Prior to the hurricane of September 22nd, proposals were discussed for increasing plant production, from 150,000 to 300,000 plants per annum.

79. As a result of the hurricane the Board had to review the position as there would be very little or no revenue forthcoming from cess funds.

80. The Board has put up proposals to Government to be forwarded to the Secretary of State for his approval for financing the existing scheme as well as a supplementary scheme for increasing plant production.

Visits to and from other Areas.

81. Dr. Shephard paid a brief visit in April, and visited some of the stations.

82. Mr. Butchart, formerly Director of Agriculture of American Samoa, and Mr. C. J. R. Bridge, a member of the staff of the Colonial Development Corporation, both studying at the I.C.T.A., Trinidad, visited the colony in connection with the work of the Scheme.

83. Mr. N. D. Nedd, Junior Agricultural Instructor, attended a Cocoa Tour of Trinidad in January organised by the Caribbean Commission.

Staff Notes.

84. Mr. George L. Ogilvie who was promoted to the post of Junior Agricultural Assistant, left the colony during the year to attend a one year course at the Eastern Caribbean Farm Institute in Trinidad.

85. Mr. N. D. Nedd, Junior Agricultural Instructor, was promoted to the post of Senior Agricultural Instructor. on 1st January, 1955.

86. Mr. R. Mark, Foreman, was appointed as Junior Agricultural Instructor on 1st February.

87. Mr. J. Telesford, Temporary Junior Field Inspector, was promoted to Foreman, Ashenden Cocoa Station, on 1st August, 1955.

88. Mr. Osee Charles, Propagator Attendant, was promoted to Temporary Junior Field Inspector on 1st February, 1955.

89. Mr. D. Fletcher, Temporary Junior Field Inspector, was promoted to Foreman, Boulogne Propagation Station, on 1st February, 1955.

Staff Members.

90.

D. A. Perryman, D.I.C.T.A., ..	Agricultural Officer (Cocoa).
A. M. Crucikshank, D.I.C.T.A.	Agricultural Assistant Cocoa).
Geo. Ogilvie, ...	Junior Agricultural Assistant.
N. D. Nedd, ...	Senior Agricultural Instructor.
B. A. Pitt, ...	Junior Agricultural Instructor.
I. Ferreria, ...	,, ,, ,,
C. Augustine, ...	,, ,, ,,
R. Mark, ...	,, ,, ,,
D. Fletcher, ...	Foreman, Boulogne Propagation Station
J. Marshall, ...	Foreman, Maran Cocoa Station.
J. Telesford, ...	Foreman. Ashenden Cocoa Station
E. Calliste, ...	Temporary Junior Field Inspector.
R. Lett, ...	,, ,, ,,
O. Charles	,, ,, ,,
E. N. Barriteau, ...	Clerical Assistant.
K. J. Nedd, ...	Clerical Assistant.

Rainfall Figures.

Cocoa Stations.

Station.		Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Boulogne ..	1955	6.21	7.30	0.90	0.68	1.87	8.38	5.09	5.67	15.91	12.49	17.81	6.36
	8 Year mean	4.93	5.56	3.02	2.66	4.62	7.78	7.57	8.88	8.61	9.89	14.43	11.39
Ashenden ..	1955	6.86	11.85	3.18	1.52	2.52	14.42	11.88	7.65	26.12	11.73	16.31	10.69
	8 Year mean	7.37	8.80	4.34	3.89	5.26	9.71	10.75	10.39	11.21	12.05	16.02	12.41
Maran	1955	6.99	8.76	4.06	1.39	1.94	15.47	12.45	11.62	21.81	15.54	17.93	6.87
	8 Year mean	5.91	8.81	3.70	3.05	5.69	10.94	12.42	12.29	13.46	11.06	15.14	10.80
*Mt. Horne ..	1955	7.58	7.63	1.30	0.74	2.32	8.93	6.08	6.20	18.38	11.19	20.46	6.16

Annual Rainfall Figures.

Station.	1948	1949	1950	1951	1952	1953	1954	1955	8 Year mean.
Boulogne ..	77.78	85.45	106.37	106.92	74.98	87.20	87.37	88.67	89.34
Ashenden ..	103.75	90.24	128.02	112.06	84.56	121.21	133.25	124.73	112.23
Maran ..	106.20	95.64	120.52	143.47	88.82	106.86	119.77	124.83	113.26
Mt. Horne ..	—	—	—	—	—	96.02	101.31	96.97	—

*Recording commenced in January, 1953.

Report on South Grenada District.

(By E. O. Barrett, Agricultural Assistant).

91. *Weather :*—The weather was unfavourable to farmers in the earlier part of the year, a fairly severe drought being experienced during March, April and May. In the latter part of the year the rainfall was better with that during September and November tending towards flood conditions.

The hurricane, "Janet" of 22nd September, added to adverse weather conditions, destroying a high percentage of crops and causing a large number of land-slides.

Rainfall for the year at Westerhall was :—

January	2.85
February	4.86
March	.87
April	.35
May	.21
June	6.80
July	6.20
August	5.38
September	17.17
October	11.23
November	12.06
December	5.64
Total	73.62

Agricultural Station at Westerhall.

92. *Soil Conservation :*—All contour drains on the station were cleaned and the general layout maintained. Khus-khus grass barriers were renewed in some places while gliricidia plants were established along drains in other places.

93. *Propagation of planting Materials :*—Several varieties of Sweet Potato were grown in blocks of varying sizes in order to increase the quantity of planting materials for distribution among farmers. Of these the most popular varieties were—V 14, Caroline Lee and Mocho or Tan Mulla.

(*b*) *Increase Peas :*—A small quantity of this variety of Peas was received and planted on the Station. Approximately 1½ lbs. was planted and a yield of 10½ lbs. obtained. Of this 9 lbs. were distributed among farmers, the remainder being reserved for further propagation.

(*c*) *Sun Flower :*—Three varieties imported from Nigeria by the Cane Farming Officer, were tried out on the Station. These were Saturn, Hungarian and Grey-seed. Of the three the Hungarian was the fastest maturer the other two varieties being destroyed by "Janet" before they had reached maturity. A yield of approximately 155 lbs. per acre was obtained from the Hungarian. A fair amount of seeds were distributed.

94. *Crop Trials :*—Two varieties of Hybrid corn, Dixie 18, and Dixie 11, were introduced from the U. S. A. for trial. 4 lbs of Dixie 18 was planted out over a ¼ square chain. The stand was fair, and caring started at seven weeks. An average of three ears to a plant was observed but the crop was destroyed by the hurricane before it had reached maturity. 10½ lbs. representing 18½ of the estimated yield was salvaged.

Dixie 11 of which only a small amount was received, was planted out later. It gave a very good stand but was destroyed by "Janet" before it had started to ear.

95. *Permanent Manurial Trial—(Manioc) :*—Cassava was grown for the second year in the Permanent Manurial Trial Plot and a yield of 2,000 lbs. was obtained.

96. *Food crop—Cassava :*—2,420 lbs of cassava was reaped from food crop plots and sold locally as foodstuff and for the making of farine.

Yams :—1,275 lbs. of Lisbon yams was reaped and was used as planting material.

Corn :—Two plots of corn were grown from which 680 lbs. representing 70% of the estimated crop was obtained in spite of storm damage.

97. *Fodder Crops—Cane :*—This was grown as a fodder crop 1¼ acres being under canes. Of this ½ acre represents B34-104 planted during the year while the remainder was ratoon from the previous year.

Corn.—Eight plots were grown as fodder crop and used for making sillage.

Gautemala Grass.—Two acres of gautemala grass was planted.

98. *Other Grasses :*—Plots of Barbados Sour Grass, Antigua Hay grass, Guinea-grass, Elephant grass, and Sorghum were laid down during the course of the year.

Pangola and Molasses grasses were introduced into the Island for trial while a plot of Toco grass and two plots of Tropical Kudzu were also established.

Livestock.

99. *Poultry Multiplication Scheme :*—During the year poor laying performance made it necessary to cull out a large number of hens thus greatly reducing the flock. It was decided to replace these with chicks from U.S.A or Canada, but due to transportation difficulties these had not yet been obtained up to the end of the year.

100. The Incubator being damaged by "Janet" the hatching of eggs and the sale of day old chicks had to be suspended temporarily.

On hand 1.1.55	Chicks reared	Sold		Died	On hand 31.12.55
		Culls	Cock-erels		
	116	94	46	81	99

Eggs Produced				Total	Sold		Transferred		Used for A.D.	Broken	On hand 31.12.55
					Table	Hatch-ing	Table	Hatch-ing			
Jan.	1,441	July	755								
Feb	1,424	August	518								
March	1,331	Sept.	382	9,934	3,128	169	3,248	2,609	194	434	163
April	1,005	Oct.	414								
May	861	Nov.	465								
June	783	Dec.	554								

101. *Pigs :*—During the year 56 pigs were produced on the station. Of these 8 eight were stillborn, four died, thirty-five were sold as weaners, one sold advanced, three remained on the station and five were on hand unsold at the end of the year. The demand for "Weaners" continued to be much higher than the supply.

102. *Dairy Herd :*—During the year the size of the herd was somewhat increased , nine calves being born during this period. These included twin calves born to "Polo" in October, the first recorded twin calves born as a result of Artificial Insemination in Grenada.

103. Milk and butter was supplied to the Hospital during the latter part of the year. 208¾ lbs of butter was made.

At present there are on hand :—

Cows	11
Heifers ..	9
Bullkins ..	2
Bulls	6
Calves ..	4

104. *Manure :*—A large quantity of pen manure was made in the covered yard though the damage to the roof of this building by "Janet" caused the loss of a fairly high % of nutrients due to exposure to weather.

Compost was made also, one heap being made from the cleanings from the Piggery and Poultry runs and the other from the cleanings from the Goat and Sheep pens.

105. *Stud Animals :*—Boars, Rams, Bucks, and Jacks stood for service during the year.

106. *Bulls :*—These were used only for Artificial Insemination.

Buildings—All buildings were damaged by "Janet", the Officer-in-Charge quarters, Dairy buildings, and office and laboratory were worst hit. One silo was burst in by the pressure of water against the walls, resulting in the loss of silage which it contained.

107. A tank (4,500 gallons capacity) was built to collect and store waste water from the dairy buildings for the irrigation of pastures in the dry season.

108. A calf-pen, with individual stalls for six calves, was also constructed.

109. *Apprentices :*—Four Apprentices from Mt. Moritz spent a month here. (August 15th to September 19th) they were put to work in the dairy, piggery, butteroom, and poultry runs in order to gain a practical knowledge of these operations. In addition they were taught compost-making and silage making.

110. *Visitors :*—The station was visited by persons from the U.S.A. and Trinidad, nine groups of school children and teachers, a group of Youth Leaders and by several other individuals.

District Work.

111. *Soil Conservation :*—28,512 feet of contour drains and barriers were dug and established. Of this amount 11,710 feet was done on Estates and 16,802 feet on small holdings.

112. The planting of suitable fodder grasses as barriers was largely encouraged, and in two areas Khus-Khus grass barriers were established to protect the road embankment from erosion.

113. *Visits :*—All estates and a very large number of small holdings were visited regularly, and a marked improvement in the willingness of farmers to make use of their extension officers was observed.

114. After "Janet" the distribution of planting material to farmers, advice on general rehabilitation work, and an increase in the demand for Soil conservation, necessitated the employment of additional staff in this district.

115. Over 11,200 Lacatan plants were distributed among planters in this area, of this amount St. David's getting 6,500 and St. George's 4,700. Ten bags of Pigeon Peas and eight bags of Black-eye beans along with a large quantity of vegetable seeds were also distributed.

116. *Organization :*—Two previously formed Peasant Associations continued to function, while a third was formed at Pomme Rose in St. David's. Help was given by Extension Staff to the School Garden Officer, both in school garden work and with a Young Farmers' Club formed by him among the Perdmontemps school children.

117. *Demonstration Plot :*—A demonstration plot was run on the Government House Crown Lands during the year in which the advantage of planting corn, yams and tannias in mounds as against flat planting, the value of using glirdcidia mulch etc., were demonstrated.

Spraying of bananas for the control of "Banana Borer" on experimental lines during December and the results, so far, have been satisfactory.

119. *Observations :*—The second crop of corn planted after "Janet" was damaged by insects and rats, resulting in a fairly low yield and in a high per centage of seeds being of poor quality for planting material.

120. Pigeon Peas and Sweet Potato also suffered heavily from damage by aphides, rats and Black birds.

121. A Field Day was held on the Government House Crown Lands during March. Over twenty-five tennants and nearby farmers attended. The virtues of using Soil conservation methods were demonstrated, and a talk given on the purpose of the demonstration in the area. Farmers expressed their opinions as to what they thought the results from the different methods of cultivation used in the plot would be. It was arranged to have another Field Day here in October, so that the farmers could see the results obtained, but owing to the hurricane, this had to be cancelled.

Report on West Grenada District.

(By E. S. Holgate, Agricultural Assistant).

Staff.

122. The staff responsible for work on the Agricultural Station and in the district are as follows :

E. S. Holgate	..	Agricultural Assistant.
M. Wilson ..	..	Junior Agricultural Instructor.
O. Campbell	..	Temporary Junior Agricultural Instructor.
C. Mitchell	..	Temporary Junior Agricultural Instructor.

123. The two temporary J. A. I's (Campbell and Mitchell) were employed shortly after the hurricane to assist in rehabilitation work.

Weather Conditions.

124. The total rainfall recorded at the Mt. Moritz Agricultural Station for eleven (11) months of the year under review was 78.09 inches. No record for the month of September was available as the hurricane which struck the island during that month completely destroyed the office on this station and all records were lost. The weather subsequent to the hurricane although very windy at certain periods, was very conducive to the growth of crops and might have been responsible to some extent for the speedy recovery of plants damaged by the hurricane.

Work on Agricultural Station at Mt. Moritz.

Soil Conservation.

125. Work done in this connexion during the year included mainly the maintenance of existing contour trenches, run-off drains and grass barriers, and gully control.

Food Crops.

126. An area of four and one-half ($4\frac{1}{2}$) acres comprising plots ranging in size from 0.06 to 1 acre was planted in food crops such as yams, tannias, sweet ptoatoes, etc.,

127. The return from crops planted during the year 1954 and harvested between January and March, 1955 was very good. Figures are given in table II. The 1955 crop was very promising but was adversely affected by the hurricane 'Janet' and returns from it might be very poor.

Cocoa.

128. The one-acre plot of clonal cocoa was maintained in good condition and was in heavy bearing when damaged by the hurricane. About 20% of the trees were destroyed and the remainder, although damaged, recovered excellently and started flowering during the latter months of the year.

Coconut.

129. The young plants put in during 1953 were making excellent growth and were maintained in a good condition. The old field, however, was almost completely destroyed by the hurricane and although a fair number of trees remained standing after the storm only about 20% showed signs of recovery.

Sugar Cane.

130. The new plot of sugar-cane in Field six made excellent growth during the year under review. This crop was planted chiefly for the purpose of providing fodder for livestock during the dry season, and this role it fulfilled very well. A few varieties however, were planted in separate plots for multiplication. The varieties planted were B-34104, B-37161, B-37172, B-4098, B-41211, B-4362, B-45151, B-4722, and B-47419.

Citrus.

131. A small citrus orchard containing Marsh seedless and Duncan grapefruit and Valencia and Washington Navel oranges was established. The new orchard together with the one established in 1952, besides their demonstrative value, is intended to serve as a source of bud-wood for future propagation.

Citrus Nursery.

132. A total of 918 budded citrus plants was distributed from the nursery which was established during the previous year. During the year under review, over 3,000 seville orange seedlings were set out in the nursery and budding of these began early in November. At the 31st December, there were 2,236 budded plants in the Nursery as follows :—

TABLE I.

Grapefruit.		Oranges.		Limes.	
Marsh seedless	822	Valencia ..	822	Sweet Lime ..	30
Beausejour ..	122	Navel ..	129	West Indian ..	38
Duncan ..	130	E. S. H. ..	26		—
Thompson pink	31	Mt. Dor ..	26		—
	1,105		1,063		68

133. These plants should be ready for distribution during the period June-August, 1956.

Bananas.

134. The banana plots were maintained in excellent condition during the year and continued to be an incentive to farmers in the village as well as visitors to the station. These plots were severely damaged by the hurricane of the 22nd September, but made rapid recovery and started fruiting late in December. Three hundred and eighty-five (385) stems of fruit were harvested as follows : 235 from January 1st—June 30th, and 150 in damaged condition immediately after the hurricane. The number of stems harvested from July-September has not been included as records were lost during the storm.

135. *Banana Leaf Spot* was effectively controlled by regular spraying with Bordeauz Mixture and Perenox.

Other Crops.

136. Corn, pigeon peas, red beans, black eye peas and market garden vegetable such as Lettuce, Cabbage, Cauliflower, Tomatoes, Salad beans were grown during the year.

Crop Return.

137. The following table shows the crop return for the year excluding the period 1st July to 22nd September. All records for this period were destroyed by the hurricane.

TABLE II.

Crops	Quantity Reaped	Rate	Estate Value. $: c.
Cabbage	76½ lbs.	16c. / 12c. per lb.	9.32
Coconuts	1,165 nuts	3c.	34.95
Tomatoes	115½ lbs.	28c. / 30c. per lb.	33.73
Lacatan Banana	385 stems	—	422.47
Sugar Cane	2 tons	—	20.00
Sweet Potato	2,367 lbs.	5c. lbs.	118.35
Pigeon Peas	438½ „	16c.	70.16
Tannias	901 „	5c.	45.05
Red Beans	62 „	24c.	14.88
Cauliflower	27½ „	24c. „	6.60
Lettuce	148 heads	5c.	7.40
Cassava	1,250 „	1c.	12.50
Nut Eddoes	199 „	6c.	11.94
Corn (shelled)	275 lbs.	7c.	19.25
Corn (on cob)	2,213 „	6c.	132.98
String Beans	10 „	16c.	1.60
Lisbon Yams	2,573 „	6c.	154.38
Moonshine Yams	3,109 „	5c.	155.45
Guinea Yams	89 „	6c.	5.34
Atoutemp Yams	600 „	6c.	36.00
Chinese Yams	594 „	4c.	23.76
Banana plants	148	12c.	17.76
Citrus plants	918	60c. / 36c.	485.76
Total			$ 1,839.43

Fodder Crops.

138. There was an adequate supply of fodder throughout the year. The fodder grasses grown were Guinea, Elephant, Guatemala, Napier, Black Millett, Columbus and Sweet Sudan.

Manuring.

139. *Pen Manure :*—Manure of this type obtained from Livestock pens was advantageously used in the kitchen garden and yam plots.

140. *Artificial Manure :*—Periodical applications of artificial fertilizers were given to certain crops.

Distribution of Planting Materials.

141. There was a great demand for planting materials such as yams, sweet potatoes, tannias, corn, black eye peas, lacatan bananas and fodder grasses. These with the exception of lacatan banana, were supplied in fair quantities from the station. Other materials distributed were budded citrus plants (918), cassava, sugar-cane, beans and vegetable seeds.

142. The demand for planting materials was very great after the hurricane and the acute shortage made it necessary for certain materials to be got from sources outside of the island. A total of 18,000 lacatan plants were distributed in this district for the period October-December.

Control of Pests and Disease of Plants.

143. Plant diseases and pests were effectively controlled by the use of fungicides and insecticides as well as field sanitation and crop rotation.

Experimental Work.

144. Nearly all experimental work on this station was affected to some extent by the hurricane and full results from most of them were not possible.

Permanent Manurial Experiment.

145. Under this experiment, work on the first indicator crop (corn) was finalised in 1955 and results showed that the only significant effect on the crop was due to Nitrogen. During the year under review the plot was prepared and planted with yams which will be the indicator crop for this period, and manurial treatments given according to plan.

Randomised Mulching Trial.

146. The Trial was conducted on this station during the period 1952-1955 with the object of determining the effects of certain mulching materials on some crops. The crops used as indicators in this trial were cassava, tannias and nut eddoes. The mulching materials used were gliricidia loppings and kus-kus.

147. There were three (3) replications, each of which was divided into three (3) plots of equal size, all separated by guard rows and mulched accordingly with gliricidia, kus-kus or left as control (no mulch). Equal quantities by weight, of each mulch were applied. The following table shows the result of the crops harvested :—

TABLE III.

Period.	Crop.	Treatment and Weight: Control.	Kus-Kus.	Gliricidia	Total.
1st year ..	Cassava ..	194 lbs.	214¼ lbs.	255½ lbs.	663¾ lbs.
2nd year ..	Tannias ..	35 „	84 „	119 „	283 „
3rd year ..	Nut Eddoes	29¾ „	48½ „	77 „	155¼ „
Treatment Total		..258¾ „	346¾ „	451½ „	1,057 „

148. The results of this trial show that the yield for the gliricidia mulched plots exceeded that of the other plots by a wide margin.

Sweet Potato Variety Trial.

149. This trial was carried out during the period 1952-1954 and the results revealed two (2) outstanding varieties namely David and Caroline Lee, which gave a maximum yield of 3,783 lbs. and 4,543 lbs. per acre respectively. In a further subsidiary trial "V-14" a newly introduced variety gave a yield of 7,526 lbs. per acre, and David 4,632 lbs per acre.

Sweet Potato Storage Trial.

150. This was carried out to investigate the possibilities of keeping sweet potatoes in storage. Tubers of five (5) varieties were stored in sand, in a dry and well-ventilated room and after three and one-half (3½) months in storage two varieties namely Caroline Lee and V-14 were still in good condition; the spoilage being 10% and 15% respectively. The other varieties (David, Edwards and B-5) did not store well.

Slanting versus Erect Planting Trial (Lacatan Bananas).

151. Although a very severe drought was experienced during the first half of the year, the plants in these plots maintained a healthy appearance. This is the second year of this trial and results were only for six (6) months as the hurricane besides damaging fields, caused loss of records.

152. The following table gives the results of fruits harvested from the period January-June, 1955 as well as that for 1954.

TABLE IV.

	Plot.	No. of Stems reaped.	Total Weight.	Average Weight.	Mean Grade.	Yield in Count bunches.
January— June 1955	(Slanting) ..	30	889½	29.6	7.35	24 4/7
	(Erect) ..	13	370¾	28.4	7.37	11
1954	(Slanting) ..	67	1,599	23.8	6.7	39 2/3
	(Erect) ..	53	1,270	24.2	6.7	50

Lacatan Banana Spacing Trial.

153. The plants in this trial were all damaged by the hurricane. Results for the first half of the year were as follows :—

TABLE V.

Plot.	No. of stems.	Wieght.
8′ x 8′	72	1,497½
10′ x 10′	64	1,769¾

154. Fruits obtained from 8ft. x 8ft. plot were somewha[illegible]or and small in size.

Simple Fertilizers Trial (Corn).

155. A block divided into five (5) plots each 0.014 of an acre in area and separated by single guard rows was prepared and planted with corn (local variety) on the 25th May, 1955. The planting distance in all plots was eighteen (18) inches apart along rows three (3) feet apart. Seed rate—four to the hole at planting and later thinned out to three. Fertiliser treatment was given three (3) weeks after planting as follows :—

TABLE VI.

Plot.	Treatment.	Rate of Application.
1	Control	—
2	2 N 1 P	3 cwt per acre
3	2 N 1 K	„ „
4	2 P 2 K	„ „
5	2 N 2 P 1 K	„ „

156. The object of this trial was to determine the extent to which the above treatments would affect the yield of the crop. No results were obtained as the crop was damaged by the hurricane.

Spacing Trial (Corn).

157. Four (4) plots of equal size were prepared and planted with corn at different spacing on 23rd May, 1955, with the object of determining the spacing at which the highest yield could be obtained.

The planting distances were in rows three (3) feet apart as follows :—

Plot 1, 12 inches apart with two (2) plants per hole.

Plot 2, 18 inches apart with three (3) plants per hole.

Plot 3, 24 inches apart with four (4) plants per hole.

Plot 4, 6 inches apart with one (1) plant per hole.

Method of Planting Yams.

159. A trial consisting of several methods of planting yams was laid out and planted during the quarter. The methods used were as follows :—

(1) Trench and bank,
(2) Trench only,
(3) Bank only,
(4) Mounds,
(5) Hoe Chops (yams only),
(6) Hoe Chops (yams interplanted with tannias).

160. Methods five (5) and six (6) are the ones primarily used by the Mt. Moritz peasant farmers. Liberal amounts of pen manure were used in all the plots.

Livestock.

161. Animals on the farm at the end of the year under review were as follows :—

Dairy :

Cows	.. 4
Heifers	.. 3
Cow calves	.. —
Bull calves	.. 1

Stud :

Buck	.. 1
Ram	.. 1
Boar	.. 1
Donkey	.. 1

162. The animals were maintained in good health, apart from two (2) cow calves and five (5) R.I.R. hens which were killed by the hurricane 'Janet'.

Buildings.

163. All buildings on the Station were kept in a good state of repair until the hurricane struck and caused severe damage to them. The foreman's quarters, the office and boucan and all livestock buildings were completely destroyed; the apprentice's house was unroofed and all windows were damaged.

Miscellaneous (Apprenticeship Training.)

164. Four (4) regular apprentices and three (3) supernumerary completed a 1-year training course during the year, and were given temporary appointments with the Department of Agriculture to assist in Agricultural Rehabilitation work.

District Work.

Introduction.

165. There was remarkable improvement in agriculture in the district during the year. Farmers showed good spirit of co-operation and responded well to advice given. Although hurricane 'Janet' dealt this industry a severe blow, farmers were not despondent as this was shown by their keeness to rehabilitate their crops.

Permanent Crops.

166. *Cocoa :*—Owing to the dry conditions that prevailed during the earlier months of the year under review, cocoa did not bear well and up to the end of June, only a meagre crop was harvested. Trees bore heavily after the first rains in June but the crop anticipated was shattered by the hurricane. Although severely damaged, this crop has been making speedy recovery.

167. *Nutmeg :*—Nutmeg bore well during the early months of the year and were harvested in large quantities. This crop was most severely hit by hurricane 'Janet', and only about 30% of it survived. Small quantities of nuts were, however, harvested after the hurricane, In some areas fallen trees not completely uprooted were bearing well.

168. *Bananas :*—This crop was affected to a considerable extent by the dry spell experienced during the early part of the year under review, and as a result production during the first six (6) months was fairly low. Just at the time when production was nearing its peak for the year the industry was dealt a severe blow by the hurricane. Banana growers, however, were not despondent, and started to rehabilitate the damaged crop with great speed.

169. *Citrus :*—Limes, Grapefruit and Oranges were harvested in large quantities during the months of January and February. Only a small percentage of the second crop harvesting which began in the month of August was reaped, as the hurricane damaged the fruit considerably. Citrus trees with the exception of limes withstood the force of the hurricane exceptionally well, and less than 5% of the trees in this area was destroyed.

170. *Coconut :*—A fairly good crop was harvested prior to the hurricane. Trees were severly damaged by the hurricane and the rate of recovery has been very slow. It is estimated that about 20% of the trees in this district has been destroyed by the hurricane.

171. *Sugar Cane :*—A good crop was harvested, the bulk of which was manufactured into wet sugar by small farmers who own mills.

172. *Food Crops :*—Food crops were seriously affected by the hurricane and the results of crops harvested during the post hurricane period were very poor. There was a severe shortage of food crops, and supplies had to be imported.

Agricultural Advisory and Extension Work.

173. *Soil Conservation :*—A fair amount of work in this direction was achieved during the year. On the holdings of twenty-seven (27) peasants, 17,626 feet of contours were established while 8,910 feet were laid on four (4) estates.

174. Farmers have got soil conservation conscious since the hurricane and numerous requests were received for laying out soil conservation measures on holdings.

Demonstrational Lots.

175. The demonstration lot at Mt. Nesbit Land Settlement was kept in good condition and crops grew well until the hurricane which damaged them severly. Rehabilitation work was started soon after the hurricane and at the end of the year, crops showed splendid recovery. Revenue from this plot for the year was $30.72 and expenditure $51.88.

176. The demonstration lot on the holding of Kenneth Jones at Grand Roy was maintained in excellent condition during the year. This plot continued to be an incentive to farmers in the vicinity and the work is being copied by a number of them.

177. *Meetings :*—A series of meetings were held throughout the district after the hurricane for the purpose of keeping planters informed about the following :—

(*a*) Agricultural Rehabilitation Loan Scheme.
(*b*) Distribution of planting materials and manures by this department.
(*c*) Soil conservation scheme and the necessity for Soil Conservation.
(*d*) The importance of co-operatives, and
(*e*) Food production drive.

Miscellaneous.

178. *Livestock Census :*—In accordance with the Livestock (Annual Census) Ordinance, 1953, a livestock census was carried out during the month of April.

179. The response to this by livestock owners, however, was very discouraging.

Report on East Grenada District.

(By Arthur Branch, Agricultural Assistant).

180. *Weather :*—The total precipitation for the year under review was the highest recorded in many years on Estates and Meterological Stations in St. Andrew's. Mt. Horne Estate recorded 13.46 inches on the morning after the hurricane "Janet" and this was the remains in the gauge.

181. The lowest rainfall for the year was .77 inches in March.

182. The highest rainfall for the year was 30.48 inches in September. Heavy showers were widely distributed in November and 30.03 inches were recorded. The average rainfall for the year under review was 13.00 inches.

183. *District Work :*—During the year the Extension Work was carried out by Agricultural Assistant A. C. Branch, and Junior Agricultural Instructor Milton John. During the emergency period the Junior Staff of the Cocoa Improvement Scheme assisted in the distribution of planting materials, and chemical fertilizers. Full co-operation was promptly given by the Agricultural Officer (Cocoa) and the Agricultural Assistant (Cocoa). Mr. Sydney Law acted as a Temporary Instructor for the two months under the emergency programme.

184. *Visits and Advisory Work :*—Thirty Estates, Eighty Peasant Farmers' Holdings, two Land Settlements and three Primary School Gardens were visited. The object of the visits were mainly to disseminate improved agricultural practices and new techniques in agricultural economy relative to the policy of the Agricultural Department, and also to give a general insight of the rehabilitation programme.

185. Emphasis was made on increasing cocoa production by planting selected seedlings where it was more economical to plant them, and plant clonal cuttings on the most fertile and accessible areas

186. It was urged that seedlings of Avocado pears, Sour orange, Seville orange and Mangoes should be planted for the Extension Staff to bud and graft better varieties scion on the stock of those seedlings. This step was taken in view of the faet that the propagating stations could not meet demands for improved planting materials.

187. Emphasis was made on drainage and the reguiar application of chemical fertilizers to increase the production of coconut. The most common practice is cutlassing the fields to gather the nuts.

188. The establishment and maintenance of fodder grasses were urged, so that livestock population would increase and more organic manure would be made available to maintain soil fertility.

189. The housing of livestock is not a common practice, and this would take more agricultural education to rouse interest in the rural areas.

190. Leaf spot (Cercospora musea) and the banana weevil borer (Cosmoplites sordidus) were anticipated to give growers of bananas trouble in production of exportable bunches, and which would eventually set back the growing industry. In order to meet the anticipated difficulties, emphasis was made on their control, and demonstrations were carried out.

191. After the Hurricane large and small farmers were interested in planting coffee extensively, and the extension staff had to make it clear that no planting materials were obtainable in Grenada, but it was the policy of the department to get from Trinidad the Robusta variety, and through the department orders were made for all interested potential producers.

192. *Soil Conservation Work :*—Under the 50% subsidy grant strenous efforts were made to accelerate soil conservation work. It was the policy to concentrate on the h avy rainfall areas with an aim at reducing the velocity of run off water, and to encourage slow movements of all rainfall between the contour strips, so that the soil would remain in place and fertility will be maintained. In nutmeg plantations erosion was more rapid than cocoa plantations, and this was mostly due to the farmers believe that the roots of nutmeg trees came on the surface to feed, and they are commonly known as surface feeders, loosing sight of the rain drops beating the soil particles in suspension and washing away the top soil from the roots, exposing the roots on the surface. The nutmeg tree is not a deciduous tree, and there would never be an organic mat to protect the roots and retain the rain drops for infiltration to take place.

193. Work carried out during the year :—

Estates :

No. of Estates	..	3
No. of Lines	..	29 drains.
Length of Lines	..	4,511 feet.
Area affected	..	11 acres.

Peasants :

No. of Holdings	..	30
No. of Lines	..	115 Barriers and drains.
Length of Lines	..	21,096 Barriers and drains.
Area affected	..	55¾ Acres.

194. These lines were run through old cocoa fields, nutmeg fields, and preparing new cocoa, and banana plots, Land Settlements and School Gardens. Messrs E. R. Kent, J. Paterson, K. Mancini, D. Mitchell, and W. A. Branch did a great deal of soil conservation work with their staff, and approximately eighty acres are affected by drains and gully control. So far the most soil conversation work is done on estates under the management of Messrs. E. R. Kent, W. A. Branch, K. Mancini, D. Mitchell, and P. Campbell. Mr. Eric Alexander was preparing his programme for 1956.

195. *Free Planting Materials Distribution :* Before the hurricane planting materials were obtainable from the Food Storage Centre, Merchants and all Agricultural Stations; vegetable seeds were carried around by the Extension Staff. These seeds and plants had to be purchased.

196. Under the emergency all planting materials were made available free to all persons interested in their welfare. There were many stations in convenient points with the planting materials, and with an order from a member of the extension service persons call at these stations, and planting materials were delivered to the bearers.

197. Seeds and other planting materials distributed :

229	packets Tomato.
60	„ pumpkin.
30	„ Lettuce.
40	„ Cucumber.
110	„ Cabbage.
93	„ Carrot.
25	„ Bean.
61	Bags Sweet Potato Slips.
640	Tannia heads.
1,723	lbs. corn seeds.
5	Bundles Cassava stick.
26,000	Lacatan suckers.

198. *Free Chemical Fertilizers Distribution :*—The Extension Staff was responsible for distributing Sulphate of Ammonia and Sulphate of Potash to all shippers of bananas and growers before the hurricane. Accurate records of shippers were not kept by the agents in the rural areas and this was responsible for two men in the Birch Grove district receiving fertilizers and they were not growers of bananas before the hurricane.

Distributed :

Sulphate of Ammonia 415 bags and 124 lbs.
Sulphate of Potash 207½ bags and 62 lbs.

199. *School Gardens :*—Before the appointment of a School Garden Supervisor, the Birch Grove Roman Catholic School Garden was partially planted and the boys were working on their projects. Soil conservation work was completed at Belair Government School. A site was selected for Mt. St. Ervans Roman Catholic School Garden, and recommendations were made for a School Garden at St. Giles Anglican School.

200. *Land Settlement* The Agricultural Assistant in the parish relieved the Land Settlement Officer from visiting Land Settlements. The Agricultural Activities on the Settlements were carried out by the skeleton Staff of the Extension Service. The Ranger had not visited Fraze Land Settlement in 1955, and this was due to the long distance he had to cover from his home to the Settlement, regular visits were paid to St. Clouds Settlement, and this Settlement was more developed because the ranger home is near.

201. During the year fifteen visits were made to Fraze Settlement. Visiting this particular Settlement was to study the Settlers' problems and how they could be tackled. First was to improve their economy, and they were interested in producing bananas, cocoa, and more food crops, and secondly was to tackle the three major problems that were hindering development. These problems are windbreaks, impeded drinage and a soil too acid for cultivation.

202. One of the Settlers was selected to be used as a model, and the three problems were tackled first on this lot, and the work done was satisfactory.

203. There was a move on foot to provide the settlers with livestock, and the pros and cons of the scheme were explained, and they were expecting the livestock, but the scheme did not materialize. Organic manure is absent in the farming practice on this settlement, and it was mainly due, because cattle failed in the exposed weather and adequate good fodder grasses were not available.

204. Rearing donkeys on the Settlement was encouraged. I do not know the reason for housing donkeys in preference to cattle, but the peasant farmer always builds a stall for his donkey and leaves the cow exposed to the elements.

205. Roads on the Settlement are improved by draining and surfacing, a causeway had to be built, but the hurricane caused the construction work to be deferred, the pipes are on the spot. There is a road to be cleared, and the settlers were given the assurance that it would be cleared, but it was not done. All blocks caused by the hurricane were cleared.

206. The Settlers are a happy co-operative lot of people willing to accept recommendations, and always ready to be guided to better their economical and social standard.

207. *Peasant Holding Investigation* :—Market garden on the Princess Alice Hospital grounds Mirabeau.

208. The planting programme commenced in April, and the work was carried out and guided by a proper plan to investigate into the products of marketing garden crops on sound economical lines, specially with the economy of this project based on Lettuce and Cabbage.

209. During the year ⅛ acre was planted in Lettuce, ⅛ acre in Cabbage and ⅛ acre in mixed vegetables' Tomato, Carrots, Beans and Turnips.

210. The figures listed hereunder represent nine months production of marketable produce. A steer was kept on the holding for producing organic manure. The hurricane destroyed a good crop of cabbage and mixed vegetables. These crops were replanted immediately afterwards.

211. At the end of the crop year a full summary will show how many men and women days were employed, and the cost of production :

Heads of Lettuce produced	.. 5,004 at 10c. per head		$ 500.40
Pounds of Cabbage	„ .. 1,242½ „ 20c. per lb.		248.60
„ Tomato	„ .. 212¼ „ 24c.	„	93.34
„ Beans	„ .. 195½ „ 16c.	„	30.28
„ Cauliflower	„ .. 125½ „ 20c.	„	25.10
„ Carrots	„ .. 26¾ „ 12c.	„	3.21
„ Turnips	„ .. 16½ „ 12c.	„	1.90
			$ 902.83

212. Pen Manure made by the steer and used on the various crops :

Lettuce 193 baskets pen Manure each 30 lbs ..	5,790 lbs.
Cauliflower and Cabbage 175 baskets pen manure each 30 lbs.	5,250 „
Carrots and Turnips 10 baskets pen manure each 30 lbs.	300 „
Beans 59 baskets pen manure each 30 lbs. ..	1,770 „
Tomato 18 baskets pen manure each 30 lbs ..	540 „
Seed boxes 12 baskets pen manure each 30 lbs.	360 „
	14,010 „

213. Pen Manure was composted and treated with a NPK to encourage quick breaking down, and to produce a better quality manure. In the final summary the cost of fertilizers, fungicides and insecticides will be shown.

214. *Extermination of Rats* :—Rats and Mongoose were very prevalent after the hurricane, and complaints came from every quarter of the destruction of food crops, other crops, clothing, and buildings by rats.

215. A small control campaign was launched with three hundred and fifty (350) pounds of Warfarine bait. The bait was stored at the Food Storage Centre at Grenville, all nutmeg Receiving Stations, and the office at Mt. Horne.

216. *Agricultural Meetings* :—One meeting was held at Munich, with a aim to encourage the peasant farmers to form a Farine co-operative. The peasants were against co-operatives, and they were very indignant over a co-operative shop they had already and which proved a failure. The Agricultural Officer (General) and the Agricultural Assistants were speakers.

217. *Livestock* : Generally the livestock population was not affected by any serious disease. Feeding stuff was not always available to keep poultry-men and pig keepers well supplied.

218. There were cases for the immediate attention of the Veterinary Officer. The less serious cases he supplied the drugs for the extension staff to administer. Two cases of diarrhoea were treated with drugs from the Vet. Four after calving cases were treated with drugs obtained locally.

219. *Castration* :—Twenty small male pigs, and three boars were castrated.

220. *Poultry* :—During the year the population declined rapidly because week old chicks were not available from the Agricultural Department to enable peasant farmers to replace their flocks.

221. *Artificial Insemination* :—This service did not work as satisfactory as it should because telephone communication with Inseminators was very poor. A revolving bull scheme would be more beneficial to the small man. A bull stationed on one of the good estates for three months, then changed around to another would improve the livestock population more rapidly.

222. *Cocoa* :—The hurricane destroyed a bumper crop, fields were in a good condition, and fruits were appearing on both old and young trees more profusely than for many a year before. Farmers applied many tons of chemical fertilizers to their fields more than any year, some of these fertilizers were used for the first time, and the general behaviour of the trees were excellent.

223. After the hurricane the extension staff was fully occupied in advising farmers how to handle the situation. Young trees were propped and the soil around the trunk was properly rammed, this measure was responsible for saving a high number of tree population per acre. Old trees were handled differently, the heavy fallen shade trees were removed, and the broken branches were taken off, the branches with pods were propped, All quick growing plants were planted to establish a conopy over the ground.

224. Sulphate of Ammonia was the first chemical to be applied followed by sulphate of potash, the trees responded remarkably, and flushing, blossoms and young pods appeared profusely, there was a good growth of young wood, and the potash hardened up the young wood to such an extent that they were resistant to the attack of insects and pests, and the dry season so far as seen would not effect the young shoots.

225. Cocoa beetles (Stirastoma breve) were prevalent. Damage to young wood was not very serious.

226. Control work was carried out, and spraying with insecticide was very effective.

227. Thrips (Heliothrips rubrocinctus) damaged leaves were not widespread, the more serious cases were localised particularly on Hope Estate. Spraying with Shell Dieldrex—15 on some estates was very effective.

228. Witches broom (Marasmius perniciosus) control has been more effective as peasant farmers were getting more familiar with the infections and the danger of the disease spreading if the brooms were not removed in the green stage.

229. *Nutmegs* :—Many estates were very active in reducing the tree population per acre, the fields were cleared by removing all useless trees and branches to a distance 30, 40 and 50 feet apart. The distance spacing was also providing additional suitable areas for the planting of Lacatan bananas. It was always more economical to remove trees than to remove branches every three or five years. Before the job could reach completion the hurricane destroyed plantations. Some of the most remarkable events were peasants effort to resuccitate trees that were lying for weeks. Many light trees were lifted, the crown was taken off and props were staked around them. The industry will not take a long time to contribute to the economy of the colony as some people anticipated. Some of the most courageous peasants planted seedlings two weeks after the hurricane. With care and good management the trees that remain standing can produce more by the application of fertilizers.

230. *Coconuts* :—Poor drainage and the little use of chemical fertilizers are responsible for fields not producing maximum per acre. Estates are ideal to run a small beef herd, and from my observation there is no interest in making capital available for development work. The Hope Estate set up is not far from wrong, but there is no good permanent pasture grass for the cattle to fatten on. The hurricane destroyed many fields, but rehabilitation was not progressing as rapidly as other crops.

231. *Bananas* :—(All exportable varieties) Apparently the peasant farmers did not cultivate the lacatan bananas as good as when Gros Michel was grown, one of the first set back was selection of site, and they were planted in shaded areas. The lacatan bananas need partial shade, free drainage, and regular application of chemical fertilizers.

232. Plants distributed after the hurricane were more wisely planted and treated: There might be cases where some of the plants are not planted in suitable soil, but the peasants were armed with the technique of planting and how to apply organic and inorganic manures.

233. *Bananas* :—Estate Experimental Work: A spacing of plant trial plot was planted for the purpose of determining which is the most economical distance plants should be planted. The plot was divided in four small plots to accommodate twenty plants in each plot.

Plot.	Spacing in square feet.
1	6 x 6
2	8 x 8
3	10 x 10
4	12 x 12

234. All the plots received the same manurial treatment. They were planted with pen manure and superphosphate, and after germination two ounces of sulphate of ammonia was applied, and regular monthly applications of two ounces, and to receive one pound NPK. at six months.

235. *Estate Experimental Work* :—Shell insecticide Dieldrex 15 trial on banana weevil borer (Cosmopolites sordidus). This insecticide has been used for the first time to control the banana weevil borer in Plantain and Lacatan at Tullieries Estate owned by Mr. Holas. Plantain stools were treated at random with one part Dieldrex in fifty parts of water and a twelve fluid ounce pint was applied to a stool. After three months Mr. Holas reported that the stools were healthier and suckers were appearing and no borers were seen in the treated stools.

236. Mt. HorneLacatan Banana Nursery : eighty stools were selected for treatment with Dieldrex. Treatment and rate of application :—

Plot.	No. of stools treated	Dieldrex 15 in water.	Application to stool.
1	20	1 part in 30 parts	10 ozs.
2	20	1 part in 40 parts	10
3	20	1 part in 50 parts	10
4	20	1 part in 60 parts	10
5	20 control.		

237. Application of the insecticide was done on the 21st November, and the rainfall for that month was 30.03 inches. Inspection was carried out weekly to check on mixtures effect on suckers and the parent tree. There was absolutely no scorching, and suckers were appearing profusely after three weeks. At four weeks some stools were dug and there were no grubs nor adults in the corm of nos. 1, 2 3, but there were adults in No. 4, but no grubs. In No. 5 adults and grubs were plentiful. No. 2 mixture was recommended.

238. Panama Disease (Fusarium cubense) was more wide spread after the hurricane and fresh outbreaks destroyed many fields. On Carriere Estate approximately ten acres were affected.

239. *Lacatan Banana Experiments* :—A 3 x3 x3 single replication factorial design manurial trial plot was planted at Carriere, Grand Bras, and Mirabeau, planting distance 8 x 8 square feet.

Treatment.	Level..	
N.	0 2 4	Cwt per acre Am So 4.
P.	0 1 2	For triple Superphosphate.
	0 2 4	For single Superphosphate.
K	0 1½ 3	Sulphate of Potash.

240. *Distribution of Lacatan Suckers :*—After the hurricane a survey was made to find out growers requirements, and from a list prepared 544,182 suckers were required for distribution to the farming population. Immediately after the hurricane 26,000 suckers were distributed.

241. *Sugar Cane :*—Production was confined to the manufacture of rum and a few peasants squeezed juice for the home use. Dunfermline Estate is the only big grower and manufacturer of rum with a pot still, this Estate manufactures approximately 6,000 P.G per year with canes grown on the estate and by purchasing canes and syrup.

242. From my observation all varieties are grown, and there is no data on the best variety for manufacturing rum. There was plan on foot to put down a variety trial plot to determine which was the most profitable variety for rum making.

243. After the hurricane the peasant farmers at Birch Grove were interested in producing cane for making wet sugar. This project was under consideration because erecting the processing machinery required capital, and Mr. L. L. Ramdhanny was approached to construct the necessary machinery on L'Esterre Estate.

244. *Citrus :*—More planting material would have to be made available if this industry is to make rapid progress. The hurricane did very little damage to this crop, and farmers are interested in planting citrus as a secondary line. Every three hundred feet from a permanent windbreak a citrus line will follow.

245. *Minor Industry :*—After the hurricane there was growing interest in cultivating coffee, Black Pepper and Pine Apple. The only planting material that was available was Pine-Apple. There was no interest in Tonka Bean and Vanilla.

246. *Food Crops :*—Before the hurricane food supply was sufficient to meet requirements. Prices were attractive and it paid the gardeners to grow a small surplus, and from that point of view there was never a glut to cause prices to drop.

247. Immediately after the hurricane things looked gloomy, and there was no interest to return to the soil for food because free food was distributed, and it was no easy matter for gardeners to get to their gardens. The clearing of roads and obstacles caused farmers to bring food stuff to accessible places to fetch a high price.

Report on Limlair Agricultural Station.

(By Rupert F. Edwards.)

248. The year 1955 has been an unfavourable period. The causes were dry weather conditions which hindered the programme set out and hurricane "Janet" which destroyed everything. New developments were :—

(*a*) Major repairs of "dead fencing".
(*b*) Additional grass barriers established.
(*c*) Culling of poultry and selling of surplus sheep, tackled.
(*d*) Deep litter building constructed.
(*e*) Extension of fodder grass areas.

249. *Crops :*—A variety of food crops were planted with the rains. Each field showed a promising appearance and high yields were expected.

250. *Livestock :*—Except for sheep which were suspected to have worms, all other stocks were in good health. Stocks at the close of the year comprised 37 poultry, (28 hens, 9 cocks), 12 Turkeys, (2 cocks, 8 hens, 2 poults). 1 Alpine goat, (buck). 1 large black boar pig, 1 Kentuckey Jack Donkey, 7 Cattle, i.e. 2 Native and 5 Nelthroppe, (1 bull, 3 bull-calves, 2 heifers, 1 cow) and 25 sheep, (10 rams, 7 ewes, 7 female lambs, 1 male lamb).

251. *Fodder Grasses :*—Extensive work has been carried out in order to cope with the increase in stock.

252. *Forestry :*—Teak cultivation progressed slowly.

253. *Adhoc trials and Experiments :*—These failed because of the hurricane.

254. *Plant Multiplication and distribution :*—A large quantity of Pigeon peas, Lisbon, Moonshine, and Fancy yams were sold to farmers as "Planting material". Bluggoe plants and Potato cuttings were distributed freely.

255. *Buildings :*—With the exception of the Foreman's Quarters, the other Farm Buildings were destroyed by the hurricane.

256. *Revenue :*—Because of the loss of essential records during the hurricane, it is somewhat impracticable to arrive at the exact amount collected for Service Fees, and the Sale of Produce and Eggs. It is believed, however, that a reasonable sum has been reached. For the period March to June, three hundred and fifty-three dollars and fifty-four cents ($353.54) was collected. (Report submitted 5th July 1955). A further sum of one hundred and eight dollars and thirty cents was reached from 4th October to 30th December 1955, making a total of four hundred and sixty one dollars and fifty four cents ($461.54). Of this amount—

$ 227.42 was realised for the sale of produce.
$ 105.72 was realised for the sale of eggs.
$ 52.80 was realised for the sale of cotton.
$ 64.80 was realised for service fees.
$ 10.80 was realised for pound fees.

257. Receipts of other amounts could not be traced as the Cash Book was washed away on the night of "Janet.."

258. I submitted on 15th October, 1955 a full detailed report on the effects of Hurricane Janet to the Limlair Station. In it I pointed out the loss of Correspondence and other valuable records. This disaster makes it very inconvenient to forward a fuller report for the year 1955.

259. *Visitors :*—During the year, the station was visited by His Excellency the Governor C. M. Deverell Esquire, C.M.G., O.B.E., C.V.O.; W. R. E.Nanton Esq., Superintendent of Agriculture Grenada; M. O. Hayling Esquire, Distirct Officer; A. N. Hughes Esquire, Dr John Watts, and Dr. J. A. Curby, Veterinary Officer, St. Vincent and a number of farmers. Very interesting remarks were made by many of the visitors.

Work in Cane Farming Division.

Colonial Development and Welfare Scheme.

(By Ernest Payne, B.S.A.)

260. *Policy :*—The sugar industry of Grenada has recently adopted the policy of gearing sugar production to meet local consumption requirements only—approximately 2,100 tons of dark crystal and 450 tons straw crystal sugars. No sugar will be exported.

261. In order to control cane production, the Grenada Sugar Factory Ltd., in consultation with the Department of Agriculture has introduced a system of written contracts between the factory and cane producers. The concept of a limited and defined cane belt has been agreed upon and Grenada Sugar Factory and the Department of Agriculture encourage cane production within the cane belt and discourage cane growing outside the belt.

262. *Production :*—The Grenada Sugar Factory Ltd., the only manufacturer of centrifugal sugar in Grenada, bagged 2,469.7 tons of sugar in 1955; of this 2,202 tons was dark crystal sugar and 267.7 tons was straw crystal sugar. The return of 9.65 tons cane per ton sugar was a marked improvement over returns in recent years. See Table—Extracts from Grenada Sugar Factory Reports, 1950-1955. The improvement was due partly to the ideal reaping weather and improved organization of reaping, involving early cutting of low rainfall areas.

Table—Extracts from Grenada Sugar Factory Reports.

	1950	1951	1952	1953	1954	1955
Sucrose cane	11.26	10.36	11.15	11.29	11.27	12.21
Fibre % cane	15.44	16.09	18.02	18.54	14.89	15.27
First expresses juice (Brix)	17.91	17.22	19.30	17.89	17.33	19.49
Purity of normal juice ..	80.08	76.93	77.32	82.90	79.77	79.33
Gallons juice per ton cane	151.60	150.55	141.44	146.68	154.05	150.61
Tons cane/Tons sugar ..	19.31	11.94	11.11	10.58	10.43	9.85
Grinding time % available	87.07	71.19	77.35	86.70	86.50	64.76
% Peasant and shore-cropers canes/total canes ..	31.80	42.70	46.70	39.00	43.03	49.50
End of crop	26th May	25th August	6th June	30th May	9th June	17th June
Total tons sugar bagged	1,687.3	2,778.8	1,928.8	2,107.8	2,527.2	2,469.7

263. This and all future grinding time data is being computed as a percentage of a 168-hour week.

264. *Damage by Hurricane 'Janet' :*—Prior to 'Janet' the 1956 crop was estimated at 26,000 tons cane. After Janet, damage was estimated at 30% and it was believed that 1,800 tons sugar would be bagged. With harvest in progress, it is apparent that only 1,500—1,600 tons sugar will be produced. The low production is partly a result of the very poor juices obtained.

265. *Technical Instruction and Extension :*—During the year estate and peasants producers were given technical instruction on all phases of cane cultivation. To assist with securing contact with peasants producers, two (2) peasant farmers Associations were established, one at Woburn and the other Calivigny. The associations hope to register under the new Co-operative Societies Ordinance. The establishment of additional farmers associations is planned for 1956.

266. In 1955 considerable effort was devoted to soil conservation measures. Cultivation of ratoon canes was advocated and is being adopted. To encourage the application of heavier doses of fertilizers to peasant's cane, the Cane Farming Officer personally supervised farm to farm deliveries of fertilizers. The response was encouraging and an intensified distribution programme is planned for 956 to help replace nutrients leached by hurricane 'Janet'.

267. Efforts made to encourage farmers and estates to adopt a cane-root crop-legume rotation met with little success and it has become evident that the successful promotion of approved farming practices will await the selection of demonstration farms to be developed as models by enthusiastic farmers under sustained guidance by the Cane Farming Officer.

268. *Cane Farming Survey :*—The fact finding survey commenced in 1954 was completed with temporary assistance from in-training agricultural apprentices. Index cards have been prepared for all cane farmers with information obtained from the survey questionaire forms and the cards will be maintained as up to date progress reports on cane farmers. When time permits, all data obtained in the survey will be analysed and findings presented in an in-department report.

269. *Research—Varietal and Fertilizers Experiments* :Two (2) varietal experiments to test B. 37161, B. 37,172, B. 4098, B 41227, B. 4362, B. 4744 and B 47419 are in progress and will be reaped during the 1956 crop.

270. Unfortunately the two (2) fertilizer trials established in 1954 were damaged and are useless. A simple, unreplicated fertilizer trial is being established at Calivigny Estate for reaping in 1957. It will be necessary to establish a new series of fertilizer trials in 1956 for reaping in 1958.

271. *Cane Disease and Pests.*—Sugar cane in Grenada is affilicted by two (2) pests, borer (Diatraea sp) and froghopper (Tomaspis sp.) In 1955 the incidence of borer and froghopper increased. The ravages of 'Janet', the high proportion of old ratoon cane coupled with careless selection of planting material, and the absence of dry weather cultivation and crop rotation have encouraged the spread of borer.

272. As in 1954, froghopper appeared in a number of cane growing districts. Post 'Janet' demands on department personnel did not allow maintenance of proper control measures and a further expansion of froghopper is expected.

273. *Rum Production* :—In 1955, official rum production for Grenada was 86,194 proof gallons as compared with 65,927 in 1954.

274. *Staff and Visits* :—In 1955 as in 1954 the Cane Farming Officer was the only officer in the Cane Farming Division of the Department of Agriculture.

275. The Cane Farming Officer visited St. Lucia January 10—11 to study the work of Mr. E. Campbell, Cane Farming Officer, St. Lucia. Particular attention was devoted to the method of organizing Peasant Cane Farmers' Associations.

276. From 28th November to 3rd December, the Cane Farming Officer attended the Annua British West Indies Sugar Technologists' Congress at Barbados.

Westerhall—Livestock Station.

277. *Dairy Cattle*:—The following table shows the increase in size of the dairy herd during 1955:—

Year 1954		Year 1955	
Cows	10	Cows	10
Cows transferred to Westerhall	1	Cows transferred to Westerhall	—
Heifers	3	Heifers	6
Bulls	—	Bulls	—
Calves born during previous year and on hand at beginning of the next year		Calves born during previous year and on hand at beginning of the next year	
Male	2	Male	3
Female	1	Female	1
Births :		Births :	
Male	5	Male	5
Female	5	Female	2
Calves transferred to Westerhall	1	Calves transferred to Westerhall	1
Total	28	Total	31

2 male calves sold during 1954.

Decrease in the herd was as follows :—

Year 1954		Year 1955	
Sales :			
Heifers	—	Heifers	—
Male calves	4	Male calves	3
Female calves	—	Female calves	—
Cows	—	Cows	—
Deaths :			
Cows	1	Cows	—
Male calves	—	Male calves	1
Female calves	—	Female calves	—
Cows transferred	2	Cows transferred	—
Total	7	Total	4

Revenue from Sales :—3 calves $83.00.

The position on 31st December, 1955 was as follows :—

Cows	11
Heifers	6
Bullkins	2
Calves	8
Total	27

Milk production and distribution.

Year 1954		Year 1955	
Total production qrts.	13,287.35	Total production qrts. ..	6,882.5
Converted into butter qrts.	4,958.95	Converted into butter qrts.	2,735.7
Fed to kids qrts. ..	68.00	Fed to kids qrts. ..	24.2
Fed to calves qrts. ..	7,041.75	Fed to calves qrts. ..	2,716.35
Fed to pigs qrts. ..	58.00	Fed to pigs qrts ..	26.1
Sold qrts.	1,110.4	Sold qrts.	1,358.25
Split qrts.	50.25	Split qrts.	21.9

For further figures on herd production see attached summary of herd records for the year..

Butter Production and Distribution :

Year 1954		Year 1955	
Production lbs. Brought Forward from 1953 —2		Production lbs. Brought Forward from 1954 —2	
	1954— 383		208¾
	385		210¾
Sales lbs	334½	Sales lbs.	100
Supplied to Hospital lbs. ..	46½	Supplied to Hospital lbs. ..	104¾
Free samples lbs.	—	Free samples lbs.	—
Spoilt lbs.	2	Spoilt lbs.	—
On hand lbs.	2	On hand lbs.	6

278. *Swine :*—The following table shows the position on 1st January, 1955.

Sows	4
Boars in service	3
Gilts	3
Young Boars	1
Weanlings	5
Total	16

Number of Piglets born during the year and their disposal was as follows :—

Year 1954		Year 1955	
Births	56	Births	56
Balance from previous year	37	Balance from previous year	9
Deaths	6	Deaths	12
Sales	71	Sales	41
Retained at Westerhall ..	5	Retained at Westerhall ..	6
Transferred to other stations	2	Transferred to other stations	1
Balance at end of year ..	9	Balance at end of year ..	5

Sale of half grown pig	$ 20.00
1 adult boar was castrated and sold ..	114.60
Revenue for sale of piglets	400.00
Total	$ 534.60

279. *Stud Centre :*—The following table shows figures in connection with the stud centre at Westerhall.

Year	Boars.	Ram Sheep	Buck Goats	Donkeys	Total.
1954	43	7	36	2	88
Revenue for 1954 ..	$25.80	$4.20	$21.60	$5.00	$56.60
1955	36	13	27	1	77
Revenue for 1955 ..	$38.44	$8.04	$17.04	$2.50	$66.02

280. The Jack was loaned to Point Saline during February, 1955.

281. The Wiltshire Horned ram was found to be unfit for further use as a stud animal and was, therefore, sold for $44.00

282. 1 Kid was sold for 3.60

$ 47.60

WESTERHALL AGRICULTURAL STATION.

SUMMARY OF HERD RECORDS FOR YEAR 1955.

1	2	3	4	5		6	7	8	9	10
		LACTATION RECORD IN POUNDS.						AVERAGE DAILY YIELD		
Total No. of adult cows in herd	Average output of milk per cow per annum.	No. of Full-time Lactations.	Average yield in 305 days	Range in yield in 30 days		Average Lact. Period	Average calving interval	During Lactation	For all cows for 1954	Remarks.
	lbs.		lbs.	Min.	Max.	Days.	Days.	lbs.	lbs.	
				lbs.	lbs.					
Cows: 8	2217.78	8	3502.2	58.5	803	295.25	386.8	9.9	9.1	Peppermint 1st. had 2 full-time Lactations.
				lbs.	lbs.					
1st calf Heifers: 3	560.6	1	7008.7	76.7	284.4	199	...	6.5	6.5	Peggy aborted and was found to be abnormal and unfit for breeding.

Notes: (1) Method of Recording: Daily.
(2) Method of Calf rearing: Weaned at Birth.
(3) Number of times milking per day: Twice.
(4) Average age of heifers at calving: Three (3) years.
(5) Type of Feeding. Fodder and concentrates (3 lbs. per 2 gallons).

J. COCOZZA,
Veterinary Officer.

Veterinary Services.

(Report by J. Cocozza, D.V.M.)

Artificial Insemination of Cattle.

283. These fall into three categories :—

(1) Insemination performed on cows for the first time since calving, or in the case of maiden heifers, for the first time ever.

(2) Repeat inseminations to either cows or heifers which have been previously served by other bulls.

(3) Repeat services to either cows or heifers which have been previously inseminated.

(1)	(2)	(3)
254	3	80

284. Three hundred and thirty seven (337) inseminations were performed on two hundred and fifty four (254) cows.

285. In many cases some cows or heifers required three or more inseminations before they came into calf.

Distribution of Insemination :—

Parish of St. George	162
Parish of St. David's	68
Parish of St. Andrew's ..	76
Parish of St. Patrick's ..	21
Parish of St. John's	9
Parish of St. Mark's	1
	337

286. During the period 22nd September to 26th October, 1955, there were forty-seven A.I. calls but owing to the severe damage done to the laboratory and electric installations at Westerhall Agricultural Station, those calls could not be attended to.

287. The difficulty involved in transmitting calls to the two A.I. centres in the island continued to be a major obstacle to the progress of the A.I. schemes.

288. For the year 1955 there were no abnormalities.

289. There was only one known abortion.

290. *Bulls :*—The Red Poll, Jersey and Grell Jersey breeds are used.

Bulls	Breed	No. of semen Collections	1st. Insem.	Repeats
Knepp Comrade ..	Red Poll	14	46	14
Ottringham Valesias Letton	Red Poll	—	30	3
Victor Echo Chief ..	Jersey	30	34	12
Buttercup Lad ..	G. Jersey	5	7	2
Royal Miss Wonder ..	G. Jersey	35	58	18
Olga's Echo ..	G. Jersey	23	83	32
Verina's Melboy Victor	G. Jersey	7	5	4

291. In cases of repeat inseminations semen from any bull is used.

292. On the 17th day of July, 1955 Ottringham Calesias Letton (Red Poll) died as a result of a perforation of the rectum.

293. Victor Echo Chief, the only Pure Bred Jersey bull, continued to give satisfactory semen even though the semen contains a fairly high percentage of dead sperms.

294. Verina's Melboy Victor, the youngest G. Jersey bull employed in the A.I. scheme shows promise of being very valuable to the scheme.

295. Royal Miss Wonder and Olga's Echo, both G. Jerseys proved to be very effective during 1955, but towards the ending of the year the semen collected from Olga's Echo was not of a very high density.

296. Knepp Comrade, the remaining Red Poll bull was used very sparingly during 1955, but the number of inseminations from the few collections were fairly high comparatively speaking.

297. It was not possible to extend the training of Inseminators during the year due to difficulties of staff, and increased work due directly to other agricultural schemes. It is the intention however, to keep as many assistants trained in the use of the A.I. as possible. It is aso intended to bring Carriacou into the A. I. scheme. Interpermanent Inseminators can be trained for that area.

298. *Revenue :*—The charge per insemination continued to be $1.20 throughout the year.

299. *Staff :*—The scheme is operated by a Veterinary Surgeon and one Assistant. Mr. Pierre left the department of Agriculture in September 1955 and was replaced by Mr. Austin Gittens. Training of Mr. Gittens proved satisfactory and he has shown great aptitude for the insemination program.

Marketing Organization.

(Report By J. W. Wilson, Marketing Officer).

300. Marketing Organization activities which compirse purchase and sale of local food crops, sale of vegetable seeds and planting materials (food crops), daily supplies to Government Institutions, production and sale of poultry and pig feeds, and the storing and shipping of the Carriacou Cotton crop, have continued during the period with an increasing demand by the public for such items as poultry feed, green vegetables and planting materials.

301. Surplus production of yams, corn and peas have been bought in season and stored for resale as planting materials, and for conversion into stock feeds.

302. Surplus production of other crops which the Organization guarantees to purchase has not been in evidence except in the case of sweet potatoes during the months March-April, when the supply of this very perishable crop exceeded demand, resulting in some loss to producers, and a percentage of spoilage in purchases made by the organization.

303. The demand in Carriacou for supplies from Marketing Organzation especially in corn for human consumption has been negligible—about 1,000 lbs. corn this year, as against 20,000 lbs. in 1954. This is due to (i) an increased local food crop supply and

(ii) more supplies available in variety from St. Vincent.

The cotton crop of 408 bales cotton was all shipped to consignees in the United Kingdom before the end of September.

304. Purchase of food crops and stock feed materials during the period under review totalled .. .. $ 38,166.12
Year Sales 54,367.22
Purchases during 1954 .. .. .. 36,678.00
Sales during 1954 .. .. .. 54,755.00

305. The hurricane of 22nd September has left its disrupting effects on the Marketing Organization. About 50 bags feeds of the stock stored at Food Storage Centres, at Grenville and Carriacou and the Agricultural Station, Tivoli were spoilt by water.

306. All current local food crops were wiped out by the hurricane, except a portion of the corn crop which was reaped before the hurricane, and about $\frac{1}{3}$ the expected root crop (yams) production. This corn came in very useful in the form of variety in diet for the peasantry, and the grinding machines of the Food Storage Centre were taxed to capacity in the production of corn meal.

307. A commendable island wide effort has been made since the hurricane, in the planting of food crops; in the meantime the Marketing Orgazination is purchasing fruit and vegetables from other Colonies within the area, in order to meet in part the needs of the public and Government Institutions, and to continue in the effort to keep prices at a reasonable level in the absence of price control.

Marketing Organization 1955.

Opening Stock Value 1st January, 1955	5,165.65	Closing Stock Value at 31st December, 1955	6,447.70
Purchases	35,246.12	Sales	54,367.22
Purchases (Account not yet adjusted to date)	2,920.00		
Loss (Damaged)	834.52		
Balance (Gross Profit on Training)	16,648.63		
	$ 60,814.92		$ 60,814.92

JOSEPH W. WILSON,
Marketing Officer.

Land Settlement.

(Report by D. K. Samuels, Agricultural Assistant).

308. *Staff :*

Mr. D. K. Samuels, Agricultural Assistant (Land Settlement).
„ C. R. Dominique, Junior Agricultural Instructor (Carriacou).
„ D. Rennie „ „ „ (Carriacou).
„ M. A. Wilson „ „ „ (Grenada),
„ L, C. Sayers „ „ „
„ C. Phillip, Land Settlement Ranger, Grenada.
„ H. LaTouche „ „
„ E. Layne „ „
„ G. Bennett „ „
„ J. Shade „ „ Carriacou.
„ C. Romaine „ „ „
„ A. Sydney „ „ „

303. *Introduction :*—During the year 1955 all phases of Land Settlement activities met with sudden and severe set-backs. In the first instance, the Land Rent Collector, Mr. E. Friday resigned his post and left for England to seek his fortune in other fields of activities. This came about at the time when the arrears of rent on Crown Lands and Land Settlements, which had been alarmingly high, began to show signs of being substantially reduced, if not completely wiped off. Temporary acting arrangements were made, until finally Mr. Peter Otway of the Food Storage Centre was appointed to the post which had then been vacant for six (6) months, and he was subsequently transferred to the Inland Revenue Office.

310. Secondly, Land Settlement Ranger Clunis Bain of Old and New Westerhall Land Settlements abandoned his post due to the poor salary attached to that post, and finally hurricane 'Janet' struck in September with devastating fury destroyed and completely wiped out all existing development leaving the lands badly denuded of permanent export and food crops, while springs, ravines and gully-courses were converted into rivers which caused massive slides, erosions, road blocks and destroyed settlers' houses, cow-sheds, and poultry runs.

311. *Settlements :*—There are fourteen (14) Land Settlements in Grenada consisting of 1,880 acres and six (6) in Carriacou consisting of 2,309 acres making a total of 4,189 acres. Six (6) of these in Grenada and five (5) in Carriacou have been fully paid up and Indentures in the course of preparation.

312. There is also an area of approximately sixty (60) acres in Mt. Moritz which was acquired in 1948 for settling peasants who were dispossessed in the establishment of the Mt. Moritz Demonstration Station. The sub-division and allotment of this area had to be deferred due to the hurricane but which is hoped to be completed in 1956. During the year Government acquired approximately fifty (50) acres of Woodlands Estate known as 'Tobago and Madeline'. This area is also to be sub-divided and allotted to peasants during 1956.

313. *Rehabilitation of Existing Settlements :*—Continued assistance by way of a grant approved under the Colonial Development and Welfare Scheme D. 1592 which began in 1951, were given to settlers for the development of minor industries and essential basic soil conservation work.

314. The 2-acre pilot holding in Mt. Nesbit had begun to be self-supporting when hurricane 'Janet' struck. All permanent and export crops, windbreaks and grass-barriers were completely destroyed, which will necessitate complete redevelopment of the area.

315. The cow which was purchased in 1954 was again artifically inseminated, but lost the calf by pre-mature birth. She has recovered since and is likely to be sold and replaced during 1956.

316. The Ranger Operator's house which was erected under the scheme was badly damaged and will be repaired in 1956.

317. *Soil Conservation :*During the year seventy-four (74) settlers received financial and technical assistance in establishing anti-soil erosion measures and windbreaks. All these have been completely wiped out and large areas became denuded, eroded and have been left abandoned for natural regeneration of vegetative growth.

313. *Livestock :*—All settlers during the year took a keen and lively interest in the livestock industry of the Colony. Small grass plots were encouraged and developed, and cow sheds erected for feeding the cattle in order to make and conserve manure for clonal cocoa plots.

All sick animals during the year were treated by the Veterinary Officer and fourteen (14) artificially inseminated.

319. *Small Stocks :*—The small stock industry in the Colony of Grenada was maintained cheifly by settlers on Land Settlements and just before the hurricane struck there were approximately 627 pigs of no pedigree and 226 goats owned by settlers. Efforts were being made to introduce the Large Black and Large White species of pigs, but this also had to be deferred to 1956.

320. *Poultry :*—The rearing of poultry by settlers during the year has been a major industry. Pedigreed chicks of the Plymouth Rocks, Rhode Islands Reds, Red Hampshire and Leghorns were distributed to the settlers in an effort to build up the egg and meat production of the industry. Some of these birds were cross-bred with the local non-descript type of birds, and appear to stand up favourably to local conditions. A vigorous and profitable trade was maintained with the Trinidad market until the hurricane in September.

321. *Crops :*—The principal crops on most settlements are cocoa, nutmegs, bananas, bluggoes, foodcrops, vegetable and other seasonal crops. Cocoa is sold to local traders whilst bananas and nutmegs are sold through the associations established for the purpose. All other crops are sold in the local market.

322. *Roads :*—During the year all Land Settlment roads were maintained up to the time of the hurricane in very good condition. The amount expended was $3,840. The actual expenditure incurred in re-opening all Land Settlement Roads was met from Hurricane Relief Funds, and this amounted to approximately $9,000. There were no newly constructed roads during the year.

323. *Water Supplies :*—Due to the absence of proper and adequate water supplies on most Land Settlements, settlers continued to make no effort to reside on their holdings. The present available sources are rivers, springs and gullys, and in most cases these are situated on individual private purchasers' holdings.

324. *Social Welfare :*—During the year continued efforts were made to resuscitate all dormant Land Settlement associations and to introduce club life and recreational facilities on the Land Settlements with no result. The great draw back lies in the fact that the settlers reside at far distances from the settlement and in most cases there are no provisions for recreational facilities.

325. *Co-operatives :*—Group activities on Land Settlements at the beginning of the year were very lively, but with the absence of the Co-operative Ordinance which was hoped to come into existence during 1955 most projects failed in club spirit as the members were disappointed in the delay of their projects being established as a registered body.

326. The Malayan Copra Drier at River Sallee continued to maintain efficiency throughout the year until the building fell just before the hurricane.

327. *Crown Lands :*—These consist of house spots and garden lots in the parishes of St. George's and St. Mark's. During the early part of the year, all house lots in St. George's were handed over to the Central Housing and Planning Authorities for the purpose of control. Subsequently, all garden lots with the exception of D'arbeau in St. George's have also been passed to the Central Housing and Planning Authority.

328. *Tenant Compensation :*—During 1955 there were numerous requests from peasants and landlords for action under the Agricultural Small Tenancies Ordinance No. 17 of 1952. There were seventy-seven (77) cases, two (2) of which were settled amicably by the parties concerned.

329. *Land Settlement Indentures :*—The number of Land Settlement Indentures issued during the year are as follows :—

Settlement.	No.	Acreage A. R. P.	Cash Value $ c.
Fraze	1	3 0 22	180.72
River Sallee ..	3	4 0 00	316.56
Mt. Nesbit ..	2	3 2 30	231.72
Limlair	1	1 3 05	240.42
St. Clouds ..	2	2 0 13	359.64
Plaisance	1	3 3 09	200.98

330. *General :*—As a result of the damage to settlers' cultivation, planting materials and artificial manure were distributed in an effort to rehabilitate their fields and to grow quick crops for food consumption. This effort was greatly aided by very favourable weather conditions and at the end of the year, corn, peas and vegetables were again appearing in the local market. It is also of interest to note that damaged cocoa trees after being raised, propped and manured, had commenced new and vigorous foilage.

Forestry.

(Report By J. S. Ross, Forestry Supervisor).

331. A chain and compass survey of an area of 86 acres being treated under the shelterwood system was completed by the Forest Supervisor sometime in June.

332. *Forest Administration :*—The Forest division falls within the Agricultural Department for administrative purposes. The Forest Supervisor is the executive officer in charge of the Forestry division and is responsible to the Superintendent of Agriculture. The post of Conservator of Forests, Windward Islands carries no executive authority; the post is advisory.

333. *Staff :*—The staff position at the end of 1955 was as follows :—

H. H. Fraser, B.Sc., Conservator of Forests, Windward Islands (Headquarters at Castries, St. Lucia).
J. S. Ross, (D.F.S. Forestry Commission Forester), Forest Supervisor.
Terence Laldee, Forest Ranger,
William Garraway, Senior Forest Guard (Eastern Range),
Samuel Daniel, Forest Guard, (Western Range),
Vannie Honore, Forest Produce Collector and partime Forest Guard (Southern Range),
L. F. Berkeley, Forest Surveyor, (on contract to 31st March, 1956).

334. Mr. L. C. Jones, Forest Ranger, resigned at the end of August. The post was filled on the 1st December by Mr. Terence Laldee.

335. The Conservator of Forests, Mr. H. H. Fraser was away from the island form September to the end of the year on vacation leave in the United Kingdom.

336. Allowances were made for additional staff, viz. one (1) Ranger and four (4) guards to bring the existing staff up to required strength for 1956 : however, it is understood that this request for additional staff has not been approved. No Forestry staff is provided to supervise the Forest areas in Carriacou. This work is being done by Land Settlement Rangers who fall under the direction of the Land Settlement Officer. Staff for this area is urgently required and until it is provided it will be impossible to do any active forestry in that area.

337. *Communications and Buildings :*—As a result of the hurricane 'Janet' all inspection paths in the Forest Reserves have been completely blocked; to date no work has been done re the clearing of these paths and little is expected to be done during 1956 as no funds have been provided in the estimates.

338. Two forestry buildings provided under Colonial Development and Welfare Scheme D. 2056 were started by the Public Works Department in March. To date these buildings have not been completed and turned over to this Department. This delay is due to damage caused to other buildings throughout the island by the hurricane 'Janet'. It is hoped that these buildings will be completed early in 1956.

Report on Forestry work in Grenada for the Year ending 31st December, 1955.

339. *Introduction :*—The Government Forest Reserves in Grenada are comprised of a block of about 5,000 acres, situated in the southern half of the island, and running from Fedon's Camp and Mt. Plasir in the north along the main central ridge to Mt. Sinai, Petit Etang and the Southeast Mountain in the south. In addition to this area, there is a small block of about 50 acres situated above Mt. Granby known as St. Germain Reserve. In Carriacou, Government owns about 500 acres of Forest lands which are made up of High North Reserve, Belair-Beausejour Reserve and Harvey Vale Reserve. Treatment of the forest areas during the year have been restricted to the continued formation of a shelterwood in about 85 acres lying south of the St. George's/Grenville main road and known as St. Margaret.

340. The hurricane 'Janet' caused widespread damage to forest areas throughout the island. It is estimated that some 10,000 acres of forest lands in the island have been severely damaged. As a direct result of this damage, recommendations have been submitted to Government based on a report by Mr. Maurice Gallant, F.A.O. Forestry Expert, and Mr. A. F. A. Lamb, Conservator of Forests, Trinidad, on necessary and urgent work that should be undertaken.

341. *Forestry Policy :*—The Forestry Division looks after the forests of the Colony as laid down in the Government Forest Policy for Grenada and Carriacou. This policy lays emphasis on protection and stresses the necessity to protect the water catchment areas, the steep hillsides and the maintenance of vegetative cover on lands that are unsuitable for agricultural purposes. It recommends the acquisition of certain areas lying above the existing water catchments and the survey and demarcation of all Government Forest Reserves.

342. *Survey and Demarcation :*—A Forest Surveyor employed under Colonial Development and Welfare Scheme D. 2056 continued survey work during the year under review. The survey of 17 lots situated in the Soulier/Mon Repos Catchment Areas was completed and work was started on the boundary line around the Grand Etang Forest Reserve.

343. Survey of the Grand Etang boundary was started at a point along the St. Georges/Grenville main road near the Soulier bridge. The surveyor proceeded in a southerly direction to Les Avocats and then east along the boundary line as far as Fon Ville. The hurricane 'Janet' interrupted operations at this point by the blocking of all lines and the consequent stopping of further survey work for the year.

344. Work has been started with the clearing of lines already surveyed, but due to the large quantities of trees that have fallen across these lines, progress has been extremely slow.

345. Survey work still to be done included the completion of the survey of the Grand Etang Forest Reserve together with the demarcation of the Mt. St. Catherine area.

346. It is estimated that this work will take three years and cost approximately $14,000.

347. *Forest Protection :*—One serious forest offence was reported during the year. This offence occurred in the South East area between Bacolet and Tuilleries, a total of about 60 trees valued at $450 were cut in the area. The matter was reported to the police and an investigation carried out, but none of the offenders were apprehended.

348. Due to the extremely rough nature of the terrain and the fact that we are extremely short staffed (one guard being entirely responsible for 2,500 acres) it was not possible to take disciplinary action, or to hold the guard responsible for this large-scale timber theft.

349. One forest fire was reported in the Soulier Catchment area, damage was limited to a small plot planted with galba, due to the prompt action by the guard on the spot.

350. No cases of encroachment on forest land have been reported during the year.

351. *Land Acquisition :*—An area of 69 acres 0 roods 15 poles was purchased from Mr. L. O. Taylor of Petit Etang early in the year. These lands are situated within the Petit Etang water catchment area.

352. Seventeen lots of land situated in the Soulier Mon Repos Catchment still await acquisition. The survey of these lots was completed during the year, however, the funds provided in the 1955 estimates were found to be inadequate and as a result these areas were not acquired. The required sum has been requested in the 1956 estimates and the area should be acquired early in the year.

353. *Meteorology :*—Rainfall recorded at the Grand Etang from January to August was as follows :—

January	9.05
February	14.27
March	3.68
April	3.26
May	5.10
June	18.48
July	20.16
August	19.60
Total for eight months	93.60

354. No record has been kept since the hurricane 'Janet' struck in September. It is estimated that over 18 inches of rain fell on the night of the hurricane.

355. *Boundary Lines :*—The cutlassing and clearing of blocks in known boundary lines and inspection paths were carried out in the early part of the year. The hurricane 'Janet' completely blocked all the boundary lines and inspection paths and until funds are provided no work can be done on these lines. At the moment, it is impossible to patrol and inspect any of the forest areas lying in the interior due to the condition of the inspection paths.

356. Nutmegs : routine cutlassing of nutmegs in order to facilitate collection was carried out during the year. These nutmegs have since been destroyed by the hurricane 'Janet' and no future revenue is expected from this source.

357. Nutmegs and mace collected and delivered to the Grenada Co-operative Nutmeg Association for the year are as follows :—

Green nutmegs	3,827 lbs.
Grinder nutmegs (cracked) ..	130¾ „
Whole mace	66½ „
Broken mace	64¾ „

358. *Silviculture :*—Silviculture has been restricted to the continued formation of a shelterwood in the St. Margaret area of the Grand Etang Forest Reserve. Due to the absence of funds, no nursery work or planting of any kind was done prior to the hurricane. In December work was started in the catchment areas of Les Avocats, Soulier/Mon Repos and Black Forest with a view to stabilising landslips and rubble areas caused by the hurricane.

359. Plants and seed for this work were supplied by the Trinidad Forestry Department, and grass (Khus-khus) and bamboo supplied locally were planted across the slopes to prevent excessive run-off and silting up of the rivers. This work is still continuing and it is estimated that the area to be treated is in the vicinity of 25 to 30 acres.

360. Overall costs in connection with this work has been very high. To date the figures show expenditure of over $100 per acre planting cost.

361. *Revenue :*—Revenue collected from Forestry sources during the year was as follows :—

Timber		$ 1,222.20
Nutmegs and mace		916.32
Fuelwood		105.50
Bamboo		101.86
Miscellaneous		6.66
	$	2,552.54
Timber supplied to Government Departments		331.00
Total Royalty	$	2,883.54

362. A total of 391 timber trees of various species totalling approximately 15,614 cubic feet and estimated to yield 109,480 board feet of lumber valued at $14,872 were sold during the year.

Plant Disease Control.

(Report by D. K. Samuels, Acting Plant Protection Officer).

Witches Broom.

363. *Introduction :*—The incidence of Witches' Broom infection throughout the year had been very inconsistent. During the period of March-April to June-July which is usually the flushing period for cocoa, the incident rose to approximately 150% above that of the corresponding periods in former years. This flushing period, being unusually prolonged aided by high rainfall and greater humidity, heavy precipitation reflected itself in the abnormally high returns of mushrooms.

364. It became necessary to do heavy felling of cocoa trees especially above the 1,000 feet elevation, where in most cases trees carried as many as 100 green brooms.

365. *Control :*—Field operation continued throughout the year, but with extremely vigorous pruning due to the abnormally high increase in infection greatly aided by field insanitation. The established control cycle was maintained, but the number of man-days in most cases were doubled to cope with the situation. In the high and intermediate rainfall areas large quantitites of mushrooms were found which necessitated heavy felling of cocoa trees. The number of trees treated during the first and second surveys of the year amounted to 101,762 and of this number approximately 70% felled due to pod and cushion infection.

366. The final survey September-December had to be abandoned due to the devastating effect of hurricane 'Janet'. Cocoa trees were destroyed and fields became inaccessible to facilitate control measures due to heavy landslides and uprooted trees.

367. *Weather Conditions :*—Records indicate that the rainfall for the year 1954 was 5.4% higher than that of the previous year, whereas records for this year 1955 indicate an increase of 75% above that of 1954. Rainfall during the first quarter of 1955 showed an increase of 25% over the corresponding period of the previous year, while the third and fourth quarter of 1955 reflects 50% above the average for the period 1952-1954.

368. *Expenditure :*—The amount expended for the control of Witches' Broom Disease for the year was $8,700. This sum was largely used during the high infection period May-July when it became necessary to increase labour by 50%.

369. *Legislation :*—Regulations under the Plant Protection Ordinance with regard to the control of Witches Broom Disease of cocoa in the Colony had been strictly observed by cocoa producers during the year. There were few isolated cases of lack of co-operation by peasants, which necessitated the serving of notice resulting in two (2) prosecutions.

370. *Love Vine :*—The method of control adopted aims primarily at the prevention of seed production by clearing the parasite from infected areas and the control of vegetative re-growth by the application of suitable poison sprays.

371. Spraying of this parasite which was found to be heavy during the month of May and subsequent to the hurricane was effectively done with a composition of Coopers Cattle Dip and Fernoxzone, 1½ oz. cattle dip to 4 ozs. Fernoxzone per gallon of water.

372. *Expenditure :*—The amount of $720 was expended during the year for the purchase of knap-sack spray pumps, Coopers Cattle dip and Fernoxzone and the paying of labour.

Legislation affecting Agriculture Enacted during the year.

Ordinance No. 13 of 1955.—Cocoa (Cess) (Amendment).
Ordinance No. 19 of 1955.—Agriculture (Hurricane Rehabilitation).
Ordinance No. 25 of 1955.—Nutmeg Industry (Amendment).
Ordinance No. 29 of 1955.—Sale of Produce (Amendment).

No.	OBSERVATION STATION.	January	February	March	April	May	June	July	August	September	October	November	December	Total	Maximuum in one day and date		No. of days on which rain fell
		Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Date.	Ins.	
1	Annandale Station ..	2·95	10·13	6·10	10·88	6·55	12·65	9·60	12·51	17.87	17·16	34·39	17·11	162·90	Nov. 27th	7·15	292
2	Botanic Station ..	5·8[illegible]	4·53	3·36	4·60	2·69	5·65	10·23	7·30	12·57	8·71	22·82	7·95	95·27	Nov. 27th	4·10	231
3	Calivigny Estate ..	4·86	4·27	2·57	4·86	2·05	3·41	4·61	5·54	11·91	5·18	20·53	5·60	75 42	Nov. 27th	5·02	166
4	Grand Etang Estate ..	28·40	10·07	6·87	11·36	6·46	8·94	11·38	12·85	18·36	16·21	36·60	16·40	183·90	Nov. 27th	6·00	250
5	Hope Vale Estate ..	6·60	5·42	2·40	5·32	4·00	2·23	7·06	6·36	10·46	6·25	20.54	6·91	83·55	Nov. 27th	4·25	200
6	Mt. Moritz Agricultural Station ..	2·79	3·77	1·88	4·45	2·41	5·49	10·16	7·06	10·73	13·00	28·34	9·55	99·63	Nov. 27th	9·15	220
7	The Park Estate ..	7·83	6·21	3·87	5·35	3·76	3·86	3·86	3·46	7·43	3·24	17·34	6·10	72·31	Nov. 27th	2·42	122
8	Richmond Hill Prison ..	5·16	3·77	2·80	4·22	2·39	4·42	9·56	6·71	10·27	6·69	21·36	6·52	83·87	Nov. 28th	5·35	259
9	Westerhall Agricultural Station ..	5·28	4·5[illegible]	2·00	4·03	3·42	3·64	5.79	5·41	8·80	5·58	20·28	7·43	76·19	Nov. 27th	5·28	166
10	Woodlands Estate ..	7·82	5·73	2·59	5·23	4·12	2·38	...	...	...	...	..	...	27.87	Jan. 27th	2·00	85
11	Ashenden Cocoa Station ..	10·37	8·33	5·59	10·08	5·38	7·50	11.07	8·45	11·70	14·13	28·40	12·77	133·77	Nov. 27th	7·24	291
12	Les Avocats W.W. ..	9·88	9·64	7·15	9·24	5·42	8·10	19.48	10·83	13·55	14·10	29·62	13·27	150.26	Nov. 28th	6·25	168
13	La Sagesse Estate ..	5·34	3·60	2·48	5·35	4·31	4 08	6.31	8·10	9·56	8·53	24·03	8·70	90·39	Nov. 23rd	3·87	168
14	Belvedere Estate ..	7·94	8·90	5·22	11·12	5·63	11·39	10.00	15·16	20·80	20·80	32·75	15·22	164·93	Oct. 5th	6·10	210
15	Boulogne Nurseries ..	5·17	4·12	3·76	6·86	3·99	5·18	4.51	6·07	11·93	10·68	18·16	6·87	87·10	Sept. 13th	3·53	234
16	Carriere Estate ..	5·16	2·79	2·24	6·18	2·86	4·79	4.58	3·77	13·27	8·10	21·87	..	75 61	Nov. 28th	4·62	133
17	Dunfermline Estate ..	3·60	1·19	5·51	4·32	2·97	5·46	4·20	4·88	12·65	10·48	22·77	6·38	84·41	Nov. 28th	5·25	141
18	Grand Baco'et Estate ..	4·75	4·24	2·55	5·12	4·06	5·03	7.39	5·23	10·61	7·98	25·13	7·04	89·13	Nov. 27th	7·05	269
19	Hope Estate ..	3·85	3·.9	2·52	5·14	3·22	4·62	6.66	3·96	8·26	6·27	20·87	5·82	74·48	Nov. 27th	7·00	145
20	Mt. Horne Cocoa Station ..	6·72	4·68	3·84	6·55	4·37	4·76	5.05	7.03	13·00	13·48	25·53	8·43	101·41	Nov. 27th	5·05	208
21	Niaganfoix Estate ..	6·19	6·57	5·21	10·40	5·10	7·19	9.74	12.20	17·04	16·54	30·60	12.95	139·73	Nov. 28th	5·40	193
22	Tivoli Agricultural Station ..	4·60	4·10	3·43	6·20	2·98	6·45	6·04	5.29	5·07	9·31	22·72	5·53	92·22	Sept. 13th	6·30	216
23	Richmond Estate ..	6·54	5·.7	6 01	8·19	3·94	7·03	7.25	7·46	11·21	9·10	21·60	10 13	103·63	Nov. 28th	3·57	240
24	Blair Athol Estate ..	4 58	4·10	3·59	6·54	1·92	4·99	5.54	5.98	13·78	8·76	22·33	6·5	88 63	Nov. 28th	4·83	223
25	Lower Marli Estate ..	3·97	3·85	3·08	4·97	1·33	4·33	4.67	4.26	9·.7	7·80	16·43	5·76	69·59	Nov. 27th	3·15	213
26	Mount Rodney Estate ..	3·26	3·49	2·23	4·35	...	3·47	3.57	4.88	9·39	7·13	15·14	6·45	63·33	Dec. 12th	2·90	186
27	Plaisance Estate ..	5·89	6·80	6·20	7·10	4·06	7·46	5.80	8.50	22·80	14·15	30·20	9·05	128·01	Sept. 13th	8 00	101
28	Samaritan Estate ..	4·64	4·74	3·47	7·38	2·84	7·22	5·92	6.60	14·57	12·62	20 93	7·29	98·22	Sept. 13th	3·08	276
29	Upper Marli Estate ..	4 68	3·48	3·29	5 76	2·22	5·78	5·29	6.49	13·45	9·5	19·11	6·54	85·61	Sept. 13th	3·95	220
30	Crayfish Estate ..	3·65	5·39	3·44	7·02	3·54	6·38	5.93	7.27	15·04	11·59	22·40	7·37	99·28	Sept. 3rd	6·01	251
31	Waltham Estate House ..	2·57	5·25	...	...	...	...	...	..	14·90	...	..	..	22·72	Sept. 4th	3 85	37
32	Waltham Overseer's House ..	...	...	2·64	6·48	3·76	8·50	6.42	3.59	...	8·58	21·83	..	61·60	Oct. 3rd	2·20	129
33	Brothers Estate ..	5·49	8·02	4·22	8·76	4·80	9.24	10.74	9.36	22·33	12·57	22·97	..	118·50	Sept. 3rd	6·70	257
34	Dougaldston Estate ..	5 60	7·.6	4·59	7·29	3·97	9·39	11.93	10.33	23·70	13·42	23·89	11·39	132·56	Sept. 3rd	7 64	265
35	Maran Cocoa Station ..	4·81	6·23	3·14	7·56	4·83	10·29	10.82	8.68	19·68	9·70	22·01	11·92	119·77	Sept. 3rd	7·35	311
36	Mt. Felix Estate ..	7·94	12·56	7·12	6·03	5·7 1	5.45	11·82	11.1[illegible]	23.31	21·73	31·45	17·28	161·35	Oct. 5th	5·40	197
37	Palmiste Estate ..	3·73	4·98	2·43	...	—	—	—	...	...	...	...	..	11·14	Feb. 17th	1·67	57
38	Botanic Gardens Carriacou ..	3·53	2·46	·45	2·57	1·04	4·32	5·68	5.01	6·18	2·09	11·89	5·00	49·80	Nov. 27th	2·44	105
39	Limlair Agricultural Station ..	2·88	1·60	·30	2·35	·95	2·50	4.13	2.91	3·43	3·17	9·82	4·35	39·39	Dec. 12th	2·20	82
40	Dumfries Estate ..	4·20	2·22	·90	3·55	1·14	4·56	5.21	3 22	5·89	1·95	11·93	4·23	49·00	Nov. 29th	3·07	108
41	Harvey Vale G'vt School ..	—	.14	1·39	3·65	1·17	4·11	5.36	3.97	6·32	4·21	10·28	4·11	44·71	Nov. 28th	2·05	107
42	BelairPark																

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